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BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 15 1941

HEMIPROSTATECTOMY FOR UNILATERAL ADENOMATOUS ENLARGEMENT

BY

W. SAMPSON HANDLEY, M.S., F.R.C.S., Hon. F.A.C.S.

Consulting Surgeon to the Middlesex Hospital

This paper deals exclusively with cases in which obstruction to urination is due to adenomatous enlargement of one lateral lobe of the prostate, while the other remains of normal size. It includes in its survey those numerous cases in which, though no increase of either lateral lobe is appreciable on rectal examination, cystoscopy reveals a middle lobe pushed up behind the urethral outlet by incipient enlargement of one or other lateral lobe. Pure middle-lobe obstructions nearly always belong to the class of unilateral enlargements.

In 1895, at a time when suprapubic operations for enlarged prostate were usually restricted to the removal of the vesical projection, and when consequent failure to relieve obstruction was erroneously attributed to atony of the bladder, Eugene Fuller of New York maintained: "If, however, all the hypertrophies, median, lateral, and round about the prostatic urethra, are removed . . . the results, as far as the bladder is concerned, are, barring mortality, satisfactory." Thomson-Walker in 1930 commented on this statement: "Here for the first time was laid down that the routine operation of prostatectomy must include the hypertrophies along the prostatic urethra . . . in other words, the extravesical or rectal enlargement as well as the intravesical projection."

But to remove "all the hypertrophies" does not in all cases involve a bilateral operation. It may be suggested that routine operations are not always good surgery, and that the infinite variety of pathological conditions should imply a corresponding flexibility and variability in surgical treatment. It has long been known that adenomatous enlargement of the prostate may be unilateral, but hitherto no practical conclusions have been drawn from this fact, and for such cases total prostatectomy has remained the rule. The object of this paper is to show that in unilateral cases Eugene Fuller's demand for the complete removal of all the hypertrophies can be fulfilled by a strictly unilateral operation—a hemiprostatectomy—restricted to the enlarged half of the prostate, and that complete relief of the urinary obstruction follows. Prima facie evidence is adduced that the unilateral operation is safer and simpler, and unattended by a serious degree of shock. It should certainly be preferred in all unilateral cases in which the immediate risk of a total enucleation appears greater than usual. Two such cases are here recorded, both operated upon this year and both in medical men. In the first case prostatectomy had been deferred by the patient's reluctance for eight years, with such deterioration of his condition that a well-known specialist recently advised permanent suprapubic drainage of the bladder. A further reason for caution was the dependence of the patient's family upon his Service pension. In the second case the patient had only partially recovered from a complete hemiplegia of six months' standing.

I have performed hemiprostatectomy about six times. The records of my earlier cases, dating back perhaps fifteen years, are inaccessible owing to war conditions. But the evidence suffices to establish a prima facie case, perhaps all the stronger because I make no claims to specialist authority on the prostate. On the other hand, I have no apology to offer for my intrusion upon the urological domain. It is in my opinion essential for the future of surgery that general surgeons shall maintain their right of entry to the common lands which, with such success and advantage, have been fenced and cultivated by the various specialties. I recall with some satisfaction that at a Birmingham meeting of the Association of Surgeons I pointed out that clot retention in the bladder can be relieved by the intravesical injection per urethram of a few ounces of a peptonizing solution, without passing any urethral instrument. Received with scepticism at the time, this suggestion has since had specialist endorsement from Mr. E. W. Riches, who advises injection of 1 oz. of glyc. pepsini undiluted.

I am not prepared to deny that if the patient is a good risk it may be better, even in unilateral enlargement, to do a complete prostatectomy, so as to avert the possibility that the unaffected lobe may in later years undergo hypertrophy. The field of application of the unilateral operation is thus a restricted one, but in my opinion in about one case in five it may prove to be the operation of choice. It is generally admitted that the usual cause of urinary obstruction is the mutual lateral pressure of the two halves of the prostate. Remove the enlarged half and it seems unlikely that serious lateral pressure will recur, even if the remaining half of the prostate at a later date undergoes moderate hypertrophy. My limited clinical experience bears out this conclusion.

Recognition of Unilateral Hypertrophy

Rectal examination in these cases shows that the median prostatic sulcus does not divide the prostatic surface into equal halves. A lateral sweep of the finger-tip, first to the left and then to the right of the sulcus, as far as the prostatic margin, gives a fairly accurate measure of the relative size of the two parts, and enables a provisional diagnosis of unilaterality to be made. A cystoscopic examination shows that the urethra is not median in position with respect to the floor of the bladder. Frequently in unilateral enlargement a post-urethral "median lobe" is present—a protrusion from the enlarged lateral lobe; or an intravesical eminence may border the urethral margin laterally on the side of the enlargement. Final confirmation of unilaterality awaits bimanual examination when the

bladder has been opened. With one finger in the rectum and another in the bladder, and a bladder sound in position, a precise estimate of the relative size of the two lobes is easy.

I must pause here to discuss what is the real nature of the operation known as prostatectomy.

Prostatectomy really an Adenectomy

The late Sir John Thomson-Walker said in the preface to his standard work, *Genito-Urinary Surgery*: "In recent works there is a tendency to slur over the science and to make prominent the art of urinary surgery. With this I am not in sympathy. It is, I believe, impossible to carry out good work on a superficial knowledge of the pathological conditions with which the surgeon has to deal." He goes on: "The pathology given in the following pages is not the pathology of the post-mortem room. It is the living pathology of the operating theatre, and as such is of vital importance to proper treatment."

His book was intended as an aid to clinical work, and his exclusion of post-mortem pathology was no doubt deliberate. But a discord which only post-mortem pathology can solve runs through prostatic literature even to the present day and bears directly upon the subject of this paper. On the one hand, authorities like Freyer and Thomson-Walker maintained or assumed that the operation of prostatectomy consists in the removal of the anatomical prostate with its capsule. Other authorities maintain that prostatectomy is really a prostatic adenectomy—a removal from the prostate of adenomatous masses. The "surgical capsule" of the adenoma, formed by pressure atrophy from the surrounding prostatic substance, remains in the body as the floor of the enucleation cavity. The supporters of the former opinion believe that the plane of separation in which the enucleating finger works lies between the anatomical prostatic capsule and the prostatic sheath of pelvic fascia. Those who support the latter opinion believe that enucleation is done in an intraprostatic plane—namely, the plane around the adenoma and just outside its proper capsule. The residuum of compressed prostate is left *in situ*.

There is no shadow of doubt that in some cases the operation done is the enucleation of an adenoma from the prostate. In Case 1, recorded here, there was enucleated from the left lobe, with complete relief of obstructive symptoms, an adenoma of the shape and size of the scaphoid bone of the carpus, with a median projection upwards into the bladder, a constriction corresponding to the grip of the internal sphincter, and a lower portion lying in the left lobe of the prostate. The tumour presented no feature of normal anatomy, and the prostatic urethra remained intact. Just as a uterine myoma may by a process of pressure atrophy free itself from the grip of the uterine muscle and become subserous or submucous, a prostatic adenoma may by a similar process come to lie just under the mucosa of the bladder or of the prostatic urethra. Its relations with the prostatic urethra may in some cases be so close that it may be impossible to take away the adenoma without also bringing away the adherent portion of the prostatic urethra. Some prostates come away in separate halves. In such cases an adenoma has formed in each lateral lobe, but the tumours have remained separate. Others come away as a single mass recognizable as resulting from the fusion of two adenomata behind the urethra, often with a middle lobe formed by the extension upwards of one of the lateral lobes. In front of the urethra the specimen shows no anterior commissure. The prostatic urethra may or may not be removed as part of the specimen. Yet other prostates come away as a single mass entirely surrounding the prostatic urethra, which is found complete, attached to the specimen, upon which the anterior commissure is plainly recognizable. Such cases lend apparent support to the view that prostatectomy is the removal of the complete anatomical prostate. A case of this kind was investigated by W. G. Richardson of Newcastle as far back as 1904. Following the death of the patient a microscopical examination showed that the bed from which the tumour had been enucleated was composed of compressed prostatic tissue. Richardson asserts that after enucleation of prostatic tumours "a complete bed is always found composed of prostatic tissue, and the undamaged sheath of the prostate is always external to the bed." These observations of Richardson's are fundamental for prostatic surgery, and it is surprising that they have been ignored in the English literature of the subject up to the present time.

American opinion appears to uphold the view that prostatectomy is adenectomy. Prof. Hugh Cabot of the Mayo Foundation trenchantly says regarding Freyer's claim that his operation removed "the entire prostate with its capsule, the line of separation lying between the capsule and the recto-vesical sheath":

> "This remarkable statement is, of course, quite without basis in anatomical fact. The operation which he did, and which was technically similar to that of Fuller, sought to enucleate the masses of fibro-adenomatous hyperplasia from within the prostate. The capsule to which Freyer referred was, of course, not the true capsule of the prostate, but what had for many years, at least in this country, been known as the 'surgical capsule' of the prostate. This consists of compressed prostatic tissue flattened by the growing masses of fibro-adenomatous hyperplasia."

This is exactly what Richardson proved in 1904 by his careful post-mortem work. Prostatectomy is adenectomy.

Analogy between Uterine Myoma and Prostatic Adenoma

Richardson says: "There appears to be an analogy between chronic enlargement of the prostate and myomata of the uterus. Both organs are essential to reproduction . . . during the declining years of fertile life both are specially liable to be affected by innocent growths of their essential tissues." It may be added that the analogy between adenomyoma of the uterus and adenoma of the prostate is especially close. The analogy must not be pressed too far. The uterus masculinus, and not the prostate, is the morphological equivalent of the uterus. Moreover, while total hysterectomy is easy, total removal of the prostate is a doubtful possibility. But the analogy does extend to surgical treatment. Hysterectomy is now often replaced by myomectomy. The replacement in unilateral cases of a bilateral adenectomy (prostatectomy) by a unilateral adenectomy (hemiprostatectomy) would be a parallel conservative development.

Frequency of Unilateral Enlargement

Thomson-Walker says: "Both lobes are usually enlarged to an equal degree, but one may be larger than the other, and, rarely, the enlargement may be confined to one lobe. In all such cases that I have examined the apparently normal lobe shows changes on section and microscopical examination which correspond exactly to those in the large lobe." These remarks seem not quite in accordance with the same author's statistical findings, based upon 54 enucleated prostates, with regard to the character of the intravesical projection (*Genito-Urinary Surgery*, p. 745).

(1) Median lobe alone	9
(2) Median and lateral lobes as a collar or distinct	18
(3) Both lateral lobes	15
(4) One lateral lobe	12
Total	54

From this table it seems possible to form an idea of the percentage of cases in which hemiprostatectomy may be

preferable to the bilateral operation. Cases in Groups 1 and 4 are candidates for the smaller operation, unless there is evidence that the lobe not projecting into the bladder is nevertheless enlarged. For the present no more precise statement upon the question is possible.

Advantages of Unilateral over Bilateral Operation

In the strictly unilateral adenomatous prostate it is meddlesome and unnecessary to remove the normal-sized lobe. To do so adds to the severity and risk of the operation without any compensating advantages except the remote and contingent ones to which I shall later refer.

The retention of the normal half of the prostate has great positive advantages. Along with it there is necessarily left the corresponding half of the prostatic urethra, forming along one side of the enucleation cavity a smooth epithelium-lined gutter guiding the urine from the bladder to the urethra. The continuity of the vesical and urethral mucous membranes—often interrupted in the bilateral operation—is maintained throughout. Nature's reconstruction of the complete tube must thus be assisted and facilitated. The residual half of the organ forms, in fact, a kind of splint or support for the enucleation cavity while it is healing and acquiring a new epithelial lining. The formation of a transverse post-prostatic bar obstructing the outflow of urine is impossible, since the residual half of the prostate holds the urethral outlet open and prevents the transverse fold of mucosa which corresponds to the posterior edge of the prostate from closing over it. The inner edge of the funnel formed by the removal of one lobe is supported and made rigid by the other lateral lobe, and so its patency is maintained.

Absence of Shock in Hemiprostatectomy

It is my experience that, except during the actual enucleation, which may cause some temporary disturbance of pulse and respiration, very little shock attends a hemiprostatectomy, even in old and feeble patients. I have done the operation but a few times, so that this must be regarded merely as a preliminary communication, but I have not lost a case. In the last case operated upon the pulse at the end of the operation was 84, and within a short time of the patient's return to bed it was 72 and of good volume. The evidence, so far as it goes, points to the greater safety of the limited operation, which has invariably proved fully efficient in restoring easy and painless micturition.

The nerve supply of a prostatic adenoma must be a rudimentary and improvised mechanism, if indeed such a tumour contains nerves at all—a point upon which no evidence appears to be available. On the other hand, the nerve apparatus of the prostatic urethra is a delicate and highly organized affair, having intimate relations with the higher centres of the cord and brain. The shock of prostatectomy is probably mainly due to urethral trauma. Though bilateral prostatectomy is possible in certain cases without injury to the prostatic urethra, as Freyer showed, it frequently involves great interference with, and sometimes complete removal of, this part of the urethra. It seems likely that the shock of prostatectomy is proportionate to the degree of injury to the prostatic urethra.

In hemiprostatectomy the urethra may remain quite uninjured. Even if it is so adherent to the adenoma that one lateral half of the prostatic urethra is removed, the degree of shock produced may be estimated as one-half the shock of a total prostatectomy. By safeguarding the integrity of the urethra so far as is possible hemiprostatectomy lessens the immediate risk of operation.

The First Hemiprostatectomy.—The first one on record appears to have been performed by W. G. Richardson about 1904. In a man suffering from signs of urinary obstruction an acute orchitis occurred. Abscess followed, and the left testicle atrophied. Fifteen months later Richardson "enucleated a large adenoma from the right half of the prostate, but there was only a minute tumour which was not enucleated in the left half" (*The Prostate Gland*, p. 85).

Middle-lobe Obstruction

In some cases though rectal enlargement of the prostate is not felt a middle lobe is seen with the cystoscope. Thomson-Walker showed that in most cases the middle lobe springs from one of the lateral lobes, and is due to incipient enlargement of that lateral lobe finding room by passing upwards in the direction of least resistance through the internal sphincter of the bladder. He also showed that obstruction to the passage of urine in such cases is not as a rule due to a corkage action of the middle lobe but to sideways pressure upon the prostatic urethra. These are in my opinion ideal cases for hemiprostatectomy.

Transurethral Resection versus Hemiprostatectomy

For such cases mere removal of the middle lobe is known to be unsatisfactory. The treatment of them by the Young punch or by urethral diathermy and removal piecemeal of the middle lobe and parts of one or both lateral lobes has proved safe and successful in the hands of a few experts. Nevertheless I believe that these median-lobe enlargements, belonging as most of them do to the strictly unilateral cases with which this paper is concerned, can be dealt with by unilateral enucleation with at least equal safety and success. What is accomplished by diathermy or transurethral resection is at best a partial removal of the adenomatous mass, the rest of which may continue to grow with a return of obstructive symptoms. In certain cases of this kind a prostatectomy has ultimately to be done, and the enucleation is made more difficult and dangerous by the fibrotic reaction of the tissues to the previous resection. Furthermore, it would seem that a clean enucleation of the enlarged lobe offers more security against later carcinoma.

With careful selection of cases the immediate mortality of transurethral resection is given by Mr. Kenneth Walker, who has done so much to develop the method, as under 5%. The period in hospital is about halved as compared with an enucleation. But, according to Mr. Walker, "there is a growing tendency among resectionists to avoid massive removal of tissue at one sitting, and to substitute when necessary several sessions for one." Thus in the long run the period of stay in hospital may not be reduced. He believes that perurethral resection is particularly indicated where it is the vesical rather than the urethral aspect of the prostate that is affected—for example, cases of obstruction due to an enlarged middle lobe, also for the small fibrous prostate, for carcinoma, and in the various forms of prostatic bar. I would dissent from his opinion only in regard to middle-lobe cases. He also says:

> "The key to success in perurethral work lies in the careful selection of cases. It is because the method has been abused by certain enthusiasts that it has sometimes been brought into disrepute and its value lost sight of. It should be realized once for all that the perurethral approach is not a general substitute for prostatectomy; it is rather a method of treatment that is applicable to special types of case or to special circumstances."

Dr. Hugh Young, speaking with what must be a unique experience of all types of prostatic operation, but with a known preference for the perineal route, says:

> "We are still convinced that in transurethral surgery by means of our prostatic excisor we have the safest method of attacking conditions for which it was originally offered—namely, contractures, bars, valves, median hypertrophies, valves of the posterior

urethra in children, and other such conditions. . . . We are still convinced that perineal prostatectomy is better in large hypertrophies and has a lower mortality. . . . We believe that with the clean enucleation of lateral, median, and other lobes one has the ability to obtain haemostasis, adequate drainage by an open wound, through which antiseptic treatment may be applied to combat infection, which has been so serious, particularly after transurethral electric resection."

These opinions date from 1936, and in my view are still valid, though most surgeons will prefer the suprapubic to the perineal route. But it should be recorded that Mr. W. M. Wardill of Newcastle, convinced by the results of Gershom Thompson of the Mayo Clinic, who in 1935 published a series of 451 cases in which prostatic obstruction was treated by the cold-punch method without a single death, has adopted the method almost as a routine. The total number of his cases is 230, with a mortality of 10.4%. In his last 100 cases the mortality has fallen to 5%. Of these cases 47 were bad surgical risks, and the mortality was confined to this group. In Mr. Wardill's opinion the safety of the operation excels that of any other treatment available, and it is not contraindicated by the presence of calculi or infected urine.

In spite of the technical improvements of recent years, haemorrhage and clot retention after endoscopic resection remain serious risks. Doyle and Feggetter in 1935 recorded a series of 150 cases done with the McCarthy resectoscope. Of these patients 21 had excessive haemorrhage with or without clot retention, and 6 died. In 156 cases 18 deaths occurred, a mortality of 11%.

Mr. E. W. Riches in 1936 advocated, as a preliminary to endoscopic resection, the injection of percaine and adrenaline into the prostatic substance so as to constrict its vessels and minimize bleeding. A special intra-urethral needle is employed, and low spinal anaesthesia after the method of Hasler. Nevertheless even with this improved technique the risks of reactionary and secondary haemorrhage remain far from negligible, and in 100 cases of endoscopic resection Riches had 6 cases of clot retention and one death.

It will be impossible for some years to pass judgment on the relative place of punch prostatectomy and hemiprostatectomy in the treatment of unilateral cases; but it seems likely that hemiprostatectomy will have a lower mortality, and will offer more security against the recurrence of obstruction. The piecemeal removal of a prostatic tumour through the urethra is a brilliant technical achievement, but is it in accordance with the general surgical principle that simple tumours should be approached by the most direct route and removed completely?

Advantages of Hemiprostatectomy

The probable presence in the normal-sized lateral lobe of early adenomatous changes may be an argument against unilateral operation in a patient who is a good operative risk; but it cannot be held to be decisive in a bad subject. The mere presence of slight adenomatous change in the residual lobe is in itself of little importance once obstruction has been relieved. The remote risks of carcinoma and of later enlargement of the residual lobe are outweighed by the outstanding advantage that the smaller operation is safer, and equally efficient for a prolonged period in relieving obstruction. Two partial operations are at any rate better than one fatal total operation. Moreover, at present this objection is a theoretical one, for in my small experience no such case has occurred. If I remove an adenoma from the breast it is not my custom to remove also the healthy breast because possibly it may later develop a similar tumour. A like rule seems appropriate for the twin halves of the prostate.

Illustrative Cases

Case 1.—A retired naval surgeon aged 72 consulted me in March, 1941, for increasing difficulty in micturition of eight years' duration. In 1933, and on several occasions since, prostatectomy had been advised by experts. Recently a well-known urologist advised permanent suprapubic drainage, and this advice shows how much the patient's general condition had deteriorated. He had lost weight and was anaemic and sallow. His normally cheerful and friendly disposition had entirely altered, and his drawn and anxious expression reflected a highly irritable and pessimistic mental outlook. Dr. C. H. Whittle reported heavy infection of the urine with *Strep. faecalis*. A suprapubic cystotomy showed the left half of the prostate enlarged, while the right half was of normal size. An extension from the enlarged left lobe projected upwards as a middle lobe behind the urethral outlet, lying immediately under the mucosa of the bladder. Ten days later an hour-glass-shaped adenoma, its upper portion forming the middle lobe, was enucleated from the left lateral lobe of the prostate without difficulty after tearing through the mucosa over the middle lobe. It presented no feature of normal anatomy, and was nowhere covered by epithelium. It was of about the size and shape of the scaphoid bone of the wrist, and its removal left the prostatic urethra quite intact, though the residue of the left lobe appeared to be a mere shell around the enucleation cavity. A careful bimanual examination confirmed that the right lobe was of normal size.

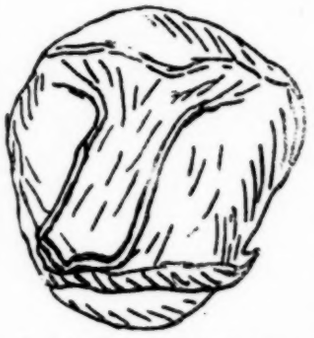
The enucleation cavity was packed with vaselined gauze, removed without difficulty in forty-eight hours. Very little shock attended the operation, and the pulse and temperature were only slightly disturbed. Oozing of blood persisted for some days and the urine became thick and ammoniacal, but cleared and became acid under mandelix and bladder irrigation. The patient was in hospital eight weeks, and left with the wound healed, passing urine freely and easily. He had expected to die of septic poisoning after the operation, but upon discharge he was anxious because he was not passing his urine often enough!

A few weeks later he wrote to say he was getting on excellently and had walked five miles. He went on: "As for the waterworks, excellent is again the word, and I feel nothing amiss now, except for an occasional small involuntary dribble; but this is getting much more infrequent. I have gained weight . . . my appetite also is excellent, and I sleep grandly. . . . Everyone here tells me how much better I look."

Case 2.—A doctor aged 70 consulted me in June, 1941, for frequency and difficulty in micturition of some years' standing and for recent haematuria. The urine was brightly coloured with blood, but there was no distension of the bladder. No urethral instrument was passed. On rectal examination the right lobe of the prostate was large, bulging, smooth, and elastic. A well-marked sulcus separated it from the left lobe, which appeared of normal size. The blood urea was 40 mg. per 100 c.cm., and the urine was acid and clear, though *B. coli* was found in it the day after the cystotomy.

The patient in January, 1941, had had an attack of complete hemiplegia, unattended by loss of consciousness, and could still walk only with difficulty and uncertainty. But his urinary discomforts were so great that I advised a cystotomy with a view to later hemiprostatectomy. A course of injections of staphylococcus "vaccoid" was given to minimize the risk of thrombosis. On June 29 I opened the bladder above the pubes, and removed about ten small uric acid calculi. A Mont-Blanc-like eminence occupied the right lateral vesical aspect of the prostate, but the left lobe appeared of normal size on bimanual examination. The bladder could not be entered by a coudé catheter. The cystotomy caused little disturbance, and on July 8, under omnopon and evipan given by Dr. C. H. Campbell Ferguson, I did a right unilateral adenectomy. The adenoma was easily enucleated and the shell of the right lobe was packed with vaselined gauze. A large coudé catheter, which now passed quite easily, was tied in. At the end of the operation the pulse was 84, and within an hour of his return to bed it was 72 and of good volume. No rise of temperature followed the operation for some days, nor was there any sign of shock. Omission of bladder irrigation on the ninth day was followed by a rigor and pyrexia, but resumption of it brought the temperature down. The patient got up sixteen days after the operation. The bladder wound closed

on July 29, two days after an indwelling catheter was resumed, and on July 30 his pulse was a steady 72 and his temperature normal. The catheter was removed on July 31. Even before its removal fluid injected into the bladder by the catheter returned freely by the urethra outside the catheter. On July 31 a rigor occurred with a temperature of 105° and an acute right orchitis. With Dr. G. S. Haynes's concurrence sulphapyridine was given; the temperature fell in forty-eight hours, and subsequent convalescence was uneventful. Urine was passed naturally and easily after August 1, and the patient describes the stream as "better than normal."



Drawing of right half-prostate of Case 2; natural size, weight 1¼ oz.

The specimen after removal was an almost globular mass 4½ cm. in diameter, and weighing 1¼ oz. On section the mass was a typical adenoma without cysts. On the left aspect was visible, adherent to but separable from it, a smooth elastic band representing the right half of the prostatic urethra. Above, this broadened out to terminate in a torn edge at the urethral outlet of the bladder. Below, it narrowed to a point short of the verumontanum, where the urethra had been half torn across (see Fig.).

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METHODS FOR THE LOCAL APPLICATION OF SULPHANILAMIDE

BY

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(From the National Institute of Medical Research, Hampstead)

Earlier papers have described the antibacterial effects of local applications of the sulphonamides to experimental wounds infected with the organisms of gas gangrene, and the concentrations in the blood and in the tissues around the wound resulting from such local applications (Hawking, 1941a, 1941b, 1941c). During this experimental work various practical methods have been devised, and these are here described in the hope that they may be helpful to those employing local applications of sulphonamide compounds to human lesions. For the sake of conciseness most references to other workers have been omitted. The compounds used have been either sulphanilamide or sulphathiazole.

Powder

In shallow open wounds this is the simplest form in which to apply the substance. It can be distributed by means of a spoon, a pepper-pot, or an insufflator. Whichever method is used, enough powder should be applied to cover the whole surface liberally, and yet not enough to form large concretions, which take a very long time to dissolve. Gently massaging the powder into the tissues with a spatula will help to get it effectively distributed and dissolved. For use in the operating theatre on fresh wounds it is convenient to have a supply of the powder in 5-gramme lots, put up either in paper packets or in screw-capped bottles. In order to obviate the very slight risk of fortuitous contamination of the powder, during its manufacture or afterwards, by tetanus or other spores of pathogenic bacteria, it can be sterilized in such packets or bottles by dry heat at 150° C. for one hour. (If sterilized in the autoclave with the cap unscrewed the powder is apt to become crystalline and is no longer suitable for use in an insufflator.) For routine ward work the use of unsterilized powder would seem to be justifiable.

Gauze

In narrow deep sinuses which are packed at regular intervals with ribbon gauze the powder can be inserted into the depths on the packing. This can be done most simply by pouring the powder on to the gauze as it is pushed in, but a better way is to incorporate the powder on to the gauze beforehand. For this purpose small glass pots with a metal screw cap, such as are used for ointments, are taken. A wide slot is cut in the lid. The pot and the gauze are sterilized separately. The gauze is then passed through a thick paste of sulphanilamide and water under sterile precautions and is placed in the pot, the end of the ribbon protruding through the slot. The top of the pot is covered with a piece of sterile oiled silk. For use in the wards the ribbon is pulled out as required. If the gauze is autoclaved *after* smearing with the paste most of the sulphanilamide forms powdery crystals, which cease to adhere to the ribbon.

Tablets

It is difficult to transfer powder to the bottom of a deep sinus. The best method in these cases is the use of small tablets made of the compressed compound—e.g., tablets containing about 0.2 gramme of material and measuring about 8 mm. across. Such tablets were first suggested by Dr. A. S. Parkes; they were kindly prepared by the British Drug Houses Ltd. and May and Baker Ltd. The tablets can easily be inserted into the desired position by sinus forceps, and they are then crushed to hasten disintegration; eventually they are completely absorbed and leave no residue which might act as a foreign body. With sulphanilamide, which is fairly soluble, tablets of the pure compound will probably be dissolved in a reasonable time, although it is advantageous to crush them in order to accelerate the process. With sulphathiazole, tablets of the pure compound (uncrushed) were found to persist in a sinus for over two days without much visible change. It is better to use tablets consisting of 0.1 gramme of sulphathiazole and 0.1 gramme of glucose, the glucose being added in order to promote the disintegration of the tablet; when these are crushed after insertion most of the material is dissolved in twenty-four hours. Tablets could also be used in a wound when it was desired to secure a steady supply of sulphonamide over a prolonged period; by choosing tablets of an appropriate size the duration of action could be varied as required. The surface of the tablets can be sterilized by dry heat at 85° C. for one hour; heating to 115° C. causes the tablets which contain glucose to turn brown. This degree of sterilization will not kill spores, but the position is the same as that described for the powder.

Pastes

The results described in this section form the preliminary part of a wider programme, which will be described in more detail when it has been completed. Briefly, the ideal sulphanilamide paste for application to wounds, burns, etc., should have the following properties:

1. It should be satisfactory pharmaceutically—i.e., stable, non-odorous, non-rancid, etc.

2. Its physical consistency should be suitable for the required purpose; burnt surfaces might require a thinner preparation than that used for plugging wounds.

3. It should comprise only materials which are available under present war conditions. Thus, since cod-liver oil, which forms the base of two of the pastes described below, is now in short supply, a search for a suitable substitute forms part of the wider programme now in progress.

4. Sulphanilamide should be liberated from the paste at the optimum rate. Presumably the concentration of sulphanilamide in the fluid in contact with the paste should be as near saturation as possible, provided that: (*a*) The concentration is not so high as to injure growing tissues or to paralyse leucocytes. Jacoby, Medawar, and Willmer (1941) found that fibroblasts and macrophages are killed by a saturated solution of sulphanilamide (concentration 1:60), are temporarily depressed by concentrations of 1:150, and are not affected at all by concentrations of less than 1:1,000. According to these findings, it might be advantageous if the paste exerted a slight restraint on the rate of solution of the sulphanilamide. (*b*) The amount absorbed is not so great as to produce a toxic concentration in the blood; probably this will not occur except when the areas to be dressed are large; it can be decided only by blood estimations of treated patients. (In a private communication Colebrook reports that one patient who was treated by sulphanilamide paste for a very extensive burn became cyanotic, and the concentration of compound in the blood was 8 mg. per 100 ml.) The whole question is under investigation.

It may here be noted that mixtures of sulphanilamide and liquid paraffin appear to be in use in some hospitals. According to experiments in this laboratory sulphanilamide is insoluble in paraffin and cannot diffuse across it. In mixtures of paraffin and sulphanilamide, however, the particles of sulphanilamide usually sink to the bottom of the paraffin layer until they come into contact with the underlying watery fluids, in which they dissolve. Hence, if sulphanilamide suspended in paraffin is injected into rabbits subcutaneously it is absorbed almost as quickly as if it were suspended in saline. This occurs because the mixture is unstable and in the body it separates into its component parts; if this separation were prevented—for example, by using petroleum jelly—little or no absorption would presumably take place.

5. The paste should be non-irritant to the tissues and innocuous to leucocytes. It should not delay healing; rather, if possible, it should stimulate it.

The complete solution of all these problems will take a considerable time, and meanwhile casualties occur which require treatment. Therefore this short description is given of the best pastes which have been found to date so that they may be available in hospitals, and clinical experience may be gained which may help to orientate the further researches in hand For the pharmaceutical side of the present work I am indebted to the British Drug Houses Ltd., who kindly co-operated with their experience in these matters and devised pastes of different properties for my trial. The physiological action of these pastes was tested by injecting them between the muscles of rabbits and into the peritoneum of rats; the irritation which they caused was not appreciably greater than would have been produced by any foreign body in these positions. Three pastes are provisionally recommended to suit three different types of lesion.

1. *Sulphanilamide, 30%; oleic acid, 1.4%; triethanolamine, 0.35%; cetyl alcohol and beeswax, each 1.4%; water to 100%.*—This is a thin paste to spread over inflamed skin surfaces—e.g., impetigo—in order to apply sulphanilamide with as little other material as possible. It can be used on granulation tissue instead of powdered sulphanilamide, but if inserted into deep wounds it leaves a residue. The sulphanilamide is absorbed from this paste almost as rapidly as when the powdered compound is applied as such. This paste was kindly tested by Dr. A. Glucksmann of the Strangeways Laboratories, who applied it every other day to standard wounds in rats. He found that it caused very slight irritation, as shown by stimulation of collagen regeneration and slight retardation of epithelial regeneration; but this irritation was so slight as to be unimportant compared with bacterial infection.

2. *Sulphanilamide, 30%; cod-liver oil, 49%; oleic acid, 3.5%; triethanolamine, 1.05%; cetyl alcohol, beeswax, and other ingredients to diminish rancidity, 3.5%; water to 100%.*—This is a paste of medium consistency. The absorption of sulphanilamide from it proceeds slightly more slowly than that which occurs when the compound is applied as a simple powder. Besides supplying a large depot of sulphanilamide, which will be taken up by any serous exudate to form an almost saturated solution, a paste of this kind provides an oily protective layer and will also prevent sticking of dressings. This paste was designed especially for the treatment of burns. Colebrook (personal communication) has observed the rapid disappearance of haemolytic streptococci following its use in such injuries; he also found that it is unnecessary to change the dressings more often than every two or three days. Robson and Wallace (1941) have reported very satisfactory results in burns treated with a similar paste made up with albucid (*p*-aminobenzenesulphonacetamide), which is considerably more soluble than sulphanilamide and which accordingly may exert a greater effect upon the less sensitive organisms such as staphylococci and *Ps. pyocyanea.*

3. *Sulphanilamide, 30%; cod-liver oil, 60%; beeswax, 10%.*—This is a stiff paste, to be used on gauze for packing wounds, in the same way as vaselined gauze is used. Its consistency can be modified by varying the proportions of cod-liver oil and beeswax. It provides a non-irritant, non-adhesive mechanical support to the sides of the wound, and at the same time gives off a supply of sulphanilamide, liberation of the compound being slow. It tends to become rancid, however, unless preventive measures are taken.

Summary

Methods are described for the local application of sulphanilamide: (*a*) as a powder to open wounds; (*b*) as tablets or on gauze to deep sinuses; (*c*) as various kinds of paste to treat inflamed surfaces, burns, and wounds which must be packed.

Details are given of three pastes which may be recommended for use in three different types of lesion.

Acknowledgments are due to Colonel L. Colebrook for inspiration and advice; to the surgical staff of the New End Hospital, Hampstead, for facilities; to Miss M. Kuck for technical assistance; and to the British Drug Houses Ltd. for co-operation in devising and preparing the pastes.

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M. B. Gordon, N. H. Solomon, and S. F. Pearlman (*J. Pediat.*, 1941, **19**, 76) record their observations on 680 scarlet fever patients aged from 10 months to 41 years, most of them being between 8 and 21 years of age. They classify these cases into the three groups of mild, moderate, and severe. The mild cases were divided into two groups: (*a*) controls and (*b*) those treated with sulphanilamide. The moderate cases were divided into four groups: (*a*) controls, (*b*) those treated with sulphanilamide, (*c*) those treated with scarlet fever antitoxin, and (*d*) those treated with sulphanilamide plus scarlet fever antitoxin. The authors' conclusions are as follows: (1) Sulphanilamide reduces the incidence and severity of complications. (2) Scarlet fever antitoxin reduces the length of the febrile period to a further extent than sulphanilamide, but it is not so effective as sulphanilamide in reducing the incidence of complications; the combination of scarlet fever antitoxin and sulphanilamide offers better results than sulphanilamide or scarlet fever antitoxin alone. (3) The toxic effects of sulphanilamide are not grave enough to contraindicate its use in scarlet fever.

TREATMENT OF DIPHTHERIA CARRIERS WITH SULPHATHIAZOLE SNUFF

BY

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Pathologist, E.M.S.

Delafield, Straker, and Topley (1941) have described the effects of antiseptic snuffs on the nasal flora of healthy subjects, and demonstrated an effective if temporary reduction in numbers of potential pathogens. At the end of December, 1940, Professor W. W. C. Topley kindly supplied me with a sample of sulphathiazole snuff for trial on nasal carriers in an isolation hospital. Twenty-eight subjects who were harbouring *Corynebacterium diphtheriae* or other pathogens in the nose were tested with the snuff. Ten per cent. sulphathiazole in magnesium carbonate was used for 26 cases and 33% sulphathiazole in magnesium carbonate for the other 2. The snuff was given six times a day on a small piece of paper, a separate piece being used each time for each child, to avoid passing infection. In all cases except one at least two nasal swabs were taken before treatment was started, in order to give a rough indication of the numbers of *C. diphtheriae* and other organisms present. In most cases a week elapsed before the next swab, which was the first to be taken during snuff treatment; subsequent swabs were taken twice weekly.

In order to reduce to a minimum the sampling errors due to dryness of the nose, the swabs were moistened with sterile broth immediately before use. The moistened swab was originally instituted because the snuff itself was thought to have a drying action on the nasal mucosa, but this was not found in all cases. However, in a few tests, moistening the swabs produced an increase in growth in five cases out of six. Dry swabs and moistened swabs were taken from the same persons on consecutive days. In one instance a moistened swab yielded one colony of *C. diphtheriae* where the dry swab gave none; one moistened swab produced a heavy confluent growth of *Staphylococcus pyogenes* (coagulase-positive) where the dry swab had yielded two colonies of *Staph. pyogenes* and two of *Streptococcus pyogenes* (Lancefield's Group A). The increase was less noticeable in three other cases, and in one instance the dry swab gave a confluent growth of *Staph. pyogenes* where the moist swab gave only 42 colonies.

Each swab was inoculated on to a blood-agar plate, a Gaze's serum tellurite plate, and a Loeffler's slope, in that order; the blood plate was inoculated first so that the effect of the snuff on the nasal flora as a whole might be as clear as possible.

At the beginning of treatment 8 subjects carried *Staph. pyogenes* alone, 10 carried *C. diphtheriae* and *Staph. pyogenes*, 2 carried *C. diphtheriae* and *Str. pyogenes*, 1 carried *Staph. pyogenes* and *Str. pyogenes*, and 6 carried all three organisms. One subject carried only *C. hoffmanni* and *N. catarrhalis*. The results of treatment are summarized in the following table:

Table showing Effect of Sulphathiazole Snuff on Nasal Pathogens

	C. diphtheriae	Str. pyogenes	Staph. pyogenes
No. of cases carrying	20	12	25
(*a*) No. showing immediate clearance	12	6	17*
(*b*) No. showing delayed clearance	3	3	4*
(*c*) No. showing irregular clearance	5	3	4*

* Indicating considerable reduction in numbers but not complete clearance.

Quantitative representation of results is greatly complicated by the use of two media, especially as one is highly selective; consequently a compromise scheme has been adopted. The approximate numbers of colonies on blood-agar plates after twenty-four hours' incubation, or on tellurite plates after forty-eight hours' incubation, are represented along the ordinates of all the charts by plus signs, which signify as follows:

++++ = approx. 101–500 colonies on blood-agar plates
+++ = " 51–100 " " " " " "
++ = " 1–50 " " " " " " or a heavy growth on tellurite plates
\+ = No colonies on blood-agar plates, but a few colonies on tellurite plates only
0 = No colonies on either plate

Results with Nasal Carriers of C. diphtheriae

(*a*) *Cases showing Immediate Clearance after Snuff* (*12 out of 20*).—Eight patients showed a marked change, the colonies of *C. diphtheriae* on the blood-agar plate falling from between 90% and 10% of the total colonies to *nil*. Chart I is typical of this response. Nasal swabs from the remaining four persons, taken immediately before treatment was started, yielded at the most a moderate number of *C. diphtheriae* colonies; in fact, they were poor subjects for demonstrating any gross change, but nevertheless they, like the other four, were cleared. Chart II illustrates this type of change.

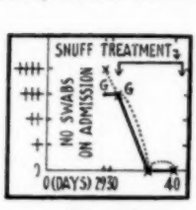

CHART I

Indications for charts: —×....×, *Str. pyogenes*; •——•, *C. diphtheriae*: G = Gravis; M = Mitis (virulent).

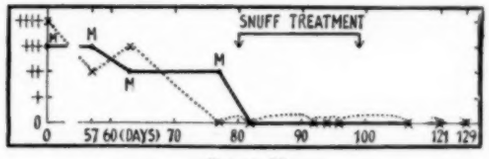

CHART II

(*b*) *Cases showing Delayed Clearance* (*3 out of 20*).—Three patients continued to carry *C. diphtheriae* in large numbers during at least a fortnight of treatment. One of these was an infant aged 2 months (Chart III), and in this instance the success of the administration of the snuff is in doubt, since the *Staph. pyogenes* of the nose were not reduced in numbers: although it is possible to make an infant sniff at a proffered powder by forcibly shutting its mouth, this does not ensure adequate or regular dosage. In the two older children the numbers of the other organisms were eventually reduced in quite typical fashion, simultaneously with the decline in the numbers of *C. diphtheriae*, as if the snuff action had been delayed.

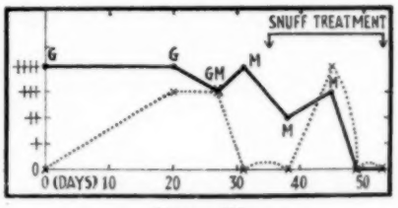

CHART III

(*c*) *Cases showing Irregular Clearance* (*5 out of 20*).—The remaining 5 patients during treatment produced

occasional nasal swabs which yielded a few colonies of *C. diphtheriae* on tellurite plates only (Chart IV).

Follow-up Swabs.—On account of the children being discharged from hospital when clear and passing out of reach of the laboratory, difficulty was experienced in obtaining swabs taken after the cessation of snuff treatment. This was achieved in 4 diphtheria and 9 staphylococcal carriers. Three children, one in Group (*b*) and two in Group (*c*), who gave an unsatisfactory or equivocal response

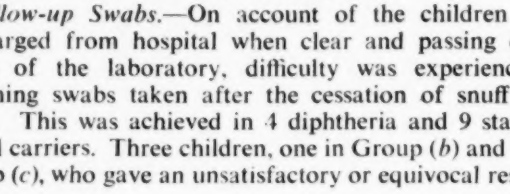

CHART IV

to the snuff, but who were eventually discharged free from *C. diphtheriae*, were found later to be nasal carriers. One child had two and the others three clear nasal swabs before discharge ; when swabbed 10, 49, and 60 days respectively after the cessation of snuff they were found to harbour a moderate number of *C. diphtheriae* in nose and throat. Three out of 20 is probably a high proportion of cleared carriers to yield positive swabs more than a week after discharge, and it is obvious that any antiseptic snuff may produce only a transient absence of *C. diphtheriae* from swabs. This is particularly liable to happen when, as during this investigation, there was no interruption of snuff treatment for twelve hours before swabbing, as recommended by Delafield and Straker. In the present investigation swabs were taken at 9 a.m., snuff having been given at 6 a.m.

Types of C. diphtheriae.—At the beginning of treatment 14 subjects were carrying *C. diphtheriae* of "gravis" type, 5 of "mitis" type, and one of both types. Ten gravis and 2 mitis carriers were cleared, and 1 gravis and 2 mitis carriers were unaffected ; the remaining 5 gave an equivocal response. Five subjects out of 20 showed change of type, all from gravis to mitis, indicating considerable cross-infection.

SIGNIFICANCE OF RESULTS

A general idea of the efficacy of the snuff with *C. diphtheriae* may be gathered from the following considerations. The nasal flora of 24 carriers of *C. diphtheriae* was followed for periods varying from four to fourteen weeks until the diphtheria bacillus disappeared and the patients were discharged. These carriers received no snuff, and serve as a control group. The most striking feature of the snuff treatment was the rapid effect on very heavy carriers. Confining ourselves to this type of patient, 18 heavy carriers were found in the control group, and an examination of their charts showed that a sudden final decline from +++ to no colonies of *C. diphtheriae* in a week or less (as, for example, in Chart I) occurred in 6 out of the 18. Of the 20 snuff-treated cases, only 10 were heavy carriers, and all of them showed a sudden final decline from +++ to *nil* ; in 7 it immediately followed the administration of the snuff, and in 3 (Group *c*) it occurred fourteen to twenty-four days after the beginning of snuff treatment. If the figures for the control group are taken as representative 33% (6 out of 18) of the treated heavy carriers would be expected naturally to exhibit a sudden final decline. The fact that 70% of the treated heavy carriers did so suggests that the snuff was effective, though the difference between the two groups is not statistically significant. (The difference is 2.3 times its standard error.) But if we assume that the sudden decline in the treated group was natural it is highly unlikely that in 7 cases out of 10 the administration of the snuff should have been decided upon at the moment a natural decline was due and in 3 cases some fourteen to twenty-three days before it was due. In the absence of more clear control data it is justifiable to assume that the sulphathiazole snuff was responsible for the marked effect that followed its use.

Results with Nasal Carriers of Staph. pyogenes

Observations on *Staph. pyogenes,* apart from their direct interest, are of considerable value as an index of satisfactory or unsatisfactory inhalation of the snuff. *Staph. pyogenes* was present, usually in large numbers, in the noses of 75% of the occupants of the diphtheria wards, and so is obviously the indicator organism of choice. Sulphathiazole snuff produced an immediate and marked reduction in the numbers of the organism carried by 17 out of 25 subjects. The reduction was generally from a heavy confluent growth to about half a dozen colonies ; on some occasions the heavy growth of *Staph. pyogenes* was replaced by a few colonies of *Staph. albus.* These findings are in agreement with those of Delafield and Straker.

Of the four failures with *Staph. pyogenes*, three occurred in the three subjects who persistently carried *C. diphtheriae* (Group (*b*), see above). The failure in these cases to reduce in numbers the indicator organism casts doubt upon the successful administration of the snuff.

When the snuff treatment was stopped 8 subjects out of 9 showed a relapse to their original state of heavy carriage after a fortnight.

Results with Nasal Carriers of Str. pyogenes

In 6 out of 12 cases the snuff produced an immediate reduction in numbers of *Str. pyogenes* carried. Three subjects continued to carry the organism in considerable numbers. One child (Chart IV) yielded persistently heavy growths of *Str. pyogenes* and only moderate or scanty growths of *Staph. pyogenes* and *C. diphtheriae.* This child had a heavily crusted nose, and it is unlikely that the snuff made adequate contact with the nasal organisms. The carriage of *Str. pyogenes* in the occupants of the diphtheria wards was very irregular throughout the winter, and liable to sudden fluctuations, possibly on account of cross-infection, the occurrence of which with other organisms is suggested by changes in the type of *C. diphtheriae* noted in five carriers.

Summary and Conclusions

The results of treatment of 20 nasal carriers of *C. diphtheriae* with sulphathiazole snuff are promising but not uniformly successful ; while in 12 cases the nasal cavity was immediately and finally cleared of *C. diphtheriae*, 3 showed no apparent response for at least a fortnight, and in 5 the response was irregular. Three patients who did not respond immediately to the snuff but who were subsequently discharged from hospital free of *C. diphtheriae* were later found to harbour this organism. Except for two cases, only 10% sulphathiazole snuff was used. Delafield and Straker have recommended 33% sulphathiazole snuff for diphtheria carriers ; and, indeed, the two patients in the present series treated with it gave a highly satisfactory response, as shown in Chart I.

The snuff tends to produce a reduction in numbers of *Staph. pyogenes* rather than clearance, which is in agreement with the findings of Delafield and Straker. However, even partial success, producing only a temporary clearing or a reduction in number of pathogens, is undoubtedly of considerable value in minimizing cross-infection in wards by reducing numbers of pathogens

sprayed in the air. It may also prevent inhaled cross-infecting organisms from establishing themselves in the nose.

An obvious reason for failure is lack of contact between the sulphathiazole and organisms, and there are at least three different ways in which contact may be prevented:

1. Failure to administer the snuff successfully to the very young, particularly if the nasal passages are partly blocked as a result of catarrh, crusting, etc.

2. Heavy crusting in the nose, preventing contact between snuff and organism even after effective inhalation of snuff. The necessity for this thorough contact was stressed by Col. Colebrook when dealing with the dressing of war wounds with sulphonamide powders; he pointed out the need for a thorough wound toilet and a prompt application of powder before the surface of the wound has time to dry and become coated with fibrin. In the nose the same problem presents itself, and it might be beneficial, at least in resistant cases, to perform some kind of nasal toilet immediately before giving the snuff.

3. Presence of *C. diphtheriae* in the nasal sinuses; the snuff would be unlikely to penetrate so far regularly or in quantities sufficient to clear them.

In cases of failure of treatment there still remains the possibility of sulphathiazole-resistant strains of *C. diphtheriae*. However, a study of the rest of the nasal flora is of value here, because, unless this is reduced quantitatively and the *C. diphtheriae* continues to flourish, there are probably some of the above factors at work.

This investigation represents a trial of sulphathiazole under field conditions, and is an attempt to glean information from routine specimens rather than from a carefully planned scheme. The snuff was originally given to subjects who were known to be heavy and long-standing nasal carriers of *Staph. pyogenes*, to find out the effect of this organism. Only incidentally were the effects on *C. diphtheriae*, *Str. pyogenes*, and other organisms noted; these effects appeared pronounced enough to warrant publication. Subsequently diphtheria infection in the district declined, and it was not possible to investigate the problem satisfactorily by a comparison of treated and controlled groups of cases; accordingly the graphic representation of results before and after treatment has been adopted. Considerable difficulty has been experienced as the result of separation of the laboratory and the wards; it is particularly desirable in an investigation of this type to co-ordinate the clinical and laboratory findings. It should be emphasized that the use of an effective snuff in the treatment of diphtheria carriers and convalescents should not be the signal for relaxation of measures designed to prevent the spread of ward infection.

I am indebted to Dr. W. J. Cox, medical officer of health for Watford, for his co-operation and for the facilities extended to me; to Prof. W. W. C. Topley for a supply of snuff; and to Prof. A. A. Miles for his advice and encouragement.

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Dr. Henry F. Vaughan, health commissioner of Detroit, has been appointed professor of public health at the University of Michigan, where he will also take part in planning for a new building and organization of a school of public health. The Kellogg Foundation and the Rockefeller Foundation have undertaken to co-operate in the project, each agreeing to pay £100,000 for the establishment of the school. Not more than half of the total sum will be available for site, building, and equipment; the remainder will be spread over a ten-year period for the initial expenses of the school.

THE NUTRITIVE VALUE OF BREAD

FORTIFIED WHITE FLOUR AND NATIONAL WHEATMEAL COMPARED

BY

MARGARET D. WRIGHT, B.A., M.B., B.S.

Despite the importance of estimating the relative nutritive values of the two alternative wartime flours—national wheatmeal of 85% extraction and white flour of 75% extraction fortified with vitamin B_1—experimental work on the subject is not yet extensive. Wholemeal bread, with its higher content of the vitamin B_2 complex, of vitamin E, and of iron, would appear from a nutritive point of view to have definite advantages.

Dr. Chick's Experiment with White and Wholemeal Bread

Dr. Harriette Chick (1940), describing an experiment in which the two flours were compared by the growth response of young rats, concluded that the advantage lies with wholemeal flour. She summarizes her findings as follows: "The nutritive value of a straight-run white flour [73% extraction] tested on young growing rats has been found inferior to that of wholemeal flour [82% extraction], even when the defects of the former in protein, minerals, and vitamin B_1 have been corrected. The inferiority must be attributed to lack of B_2 vitamins."

The experimental work which led to these conclusions may be described very briefly as a comparison of the effects on the growth of nine young rats of two diets, one based on straight-run white flour of 73% extraction (not 75% as at present in use), the other based on "wholemeal" flour of 82% extraction (not the 85% wheatmeal now being advocated). In view of its slightly higher protein content compared with white flour (13% against 12.1%), the wholemeal flour was fed at the lower level of 82% against 88% for the white flour, the balance being restored so far as carbohydrate is concerned by the addition of 6% of pure maize starch to the wholemeal diet. The two diets were alike in all other respects, except that to each rat on the white-flour diet there was given daily by pipette 10 microgrammes of pure vitamin B_1, this being regarded as an optimal amount.

Examination of the numerical results given for the average weekly gains in weight shows that the rats on the wholemeal-flour diet grew much faster than those on the white-flour diet, and at first sight these figures are impressive. On closer investigation, however, it is seen that during the first week the food intake of the rats on the white-flour diet was much lower than that of rats on the "wholemeal" diet. While this may have been due to nothing more than differences in palatability—since the animals' appetites were presumably normal on their B_1 intake—it nevertheless follows that the carefully computed theoretical equality of protein intake was not attained in practice: the rats on the white-flour diet received 6.25 grammes of protein in the first week, whereas the rats on the wholemeal-flour diet received 9.09 grammes of protein (of a slightly higher biological value). The figures for the second week were 6.8 grammes for rats on the white-flour diet and 10.3 grammes for those on the "wholemeal" diet. It should be observed that this differential intake of protein for the first and second weeks can have been due to nothing more than inacceptability of the white-bread diet to the rat palate. The effect of such a wide difference in protein intake, in a growth-rate experiment designed to be crucial as to the relative value of the diets in other respects, is fundamental.

Certain other possibly less important points appear to arise. Having regard to the food intake of the animals concerned, 82% of "wholemeal" flour—assuming a value of 1 I.U. per gramme—should provide approximately twice as much vitamin B_1 daily as was received by the rats on the white-flour diet. As already stated, 10 microgrammes (3⅓ I.U.) has been regarded as optimal for these animals, but in such a comparison as is

now being made it should not pass unnoticed that the other group of rats was receiving approximately 6 I.U. of vitamin B_1 daily.

It should be noted that although Dr. Chick attributed her findings to an inferiority of the B_2 vitamins in the white-flour diet, this diet was much inferior to the other in vitamin E also. Published findings on the subject are scanty, and Olcott and Mattill (1937) record the same rate of growth in young rats on an E-deficient as on an E-adequate diet. Yet it is known that adult rats reach a lower maximum weight on diets deficient in vitamin E; the comparison between the two flours in respect of the B_2 vitamins would have been closer if the requirements for vitamin E of rats on the white-flour diet had been satisfied. It has also been shown that vitamin E is not without influence on the fate of vitamin A in the body (Davies and Moore, 1941).

In view of the small number of animals employed (nine in all) we should have liked to examine the significance of the differences between the growths of the rats on the two diets; it has not proved possible to do this, since figures for individual rats are not given. The four points so far enumerated are:

1. The quantitative shortage of protein and of all other ingredients of the white-flour diet during the first and second weeks of the experiment.
2. The imbalance of the diets in respect of vitamin B_1.
3. Their imbalance in respect of vitamin E.
4. The fact that it has not been possible to assess statistically the significance or otherwise of the findings.

Of these points, the only one which would probably be generally regarded as of sufficient weight to throw doubt on Dr. Chick's conclusions is the first, although it is unfortunate from the point of view of the findings of the experiment that the other, minor, objections both operate in favour of the "wholemeal" diet and against the white. The cause of the differences in protein intake in the first and second weeks was clearly the contrast between the two diets in palatability to the rat.

The fundamental nature of this objection is perhaps best appreciated by considering the situation which would arise were it possible to carry out feeding experiments on a sufficiently large number of human subjects. It is generally agreed that white bread is more widely acceptable, and in an *ad lib.* test on growing children the advantage might therefore for this reason well appear to be with white bread. It is clear that such an experiment would not be regarded as conclusive in respect of the relative nutritive values of the two breads. For such a comparison equality of intake is essential. For this and the other reasons already cited it was decided to undertake further work on the relative values of the two main flours suggested for general use under more nearly equal conditions.

First Experiment, comparing Fortified White Flour and National Wheatmeal

Thus, although the work planned was, like Dr. Chick's, a comparative study of the nutritive values of a high-extraction flour and a white flour whose deficiencies of vitamin B_1, protein, and mineral salts were made good, the bases of the diets differed. The materials used in this test were white flour of 75% extraction fortified with 0.2 gramme of aneurin per 280-lb. sack, and national wheatmeal of 85% extraction. Both were purchased direct from one of the largest plant bakeries in North-West London.

	% Ash	% Protein
White flour, 75% extraction	0.53	N_2 2.27 × 5.7
Wheatmeal, 85% extraction	0.86	N_2 2.39 × 5.7

All previous tests on flours appear to have been carried out with the flour either untreated or cooked by steaming, as was done in Dr. Chick's work; but, since flour is always eaten after cooking and the vast bulk is consumed baked into bread, it seemed that the results obtained would be more directly applicable to human nutrition if the experimental diets were also baked into loaves before feeding. It was necessary to add a small quantity of baker's yeast containing the other vitamins of the B complex. This was not regarded as a disadvantage, since yeast is so widely used in bread-making—contributing, in the quantities generally employed, an addition of vitamins insignificant in human nutrition. The diets were as follows:

400 grammes of flour (fortified white of 75% extraction or national wheatmeal).
27 grammes of G.L. ashless extracted casein.
18 grammes of arachis oil.
9 grammes of McCollum's salt mixture.
12 grammes of yeast.

The iron in the salt mixture compensated for the deficiency of this mineral in white bread. The yeast used throughout the test was identical and the baking conditions were kept constant.

Young black-and-white rats of our own inbred laboratory strain weighing 36 to 54 grammes were used. They were divided into groups, each group composed of rats as similar as possible, with the sexes and litter-mates proportionately distributed. Two groups were given the diets described, and in addition each rat received daily a drop of cod-liver oil in which α-tocopherol had been mixed at the rate of 170 mg. in 6 oz. of oil. The rats were caged separately. The test lasted for thirty-three days, beginning when the rats were 4 weeks old.

The vitamin B_1 content of white flour of 75% extraction is about 42 units per 100 grammes. The addition of 0.2 gramme aneurin per sack would add approximately 52 units per 100 grammes, thus making a total of 90 to 95 units. The wheatmeal contained 109 units per 100 grammes. Allowing for the water added to mix the diets—more was used for the wheatmeal than for the white-flour loaves—and for some loss in baking, the vitamin B_1 contents found were in accordance with expectations. Thiochrome assays of the two foods showed very comparable vitamin B_1 contents, tests on the baked loaves giving values between 57 and 61 units per 100 grammes.

The wheatmeal loaves had approximately 3% higher moisture content than the white loaves, and allowance was made for this in weighing the slices for the animals. It would have been desirable to add a flavouring agent to both diets to equalize their palatability and thus increase the total intake of food; but since no means of doing this was known it was decided to restrict the intake where necessary, so that all rats consumed approximately equal amounts of food. This was accomplished in practice by always feeding the rats as soon as those eating at the slowest rate had finished or practically finished their previous feed. The animals on the wheatmeal diet always consumed their share before those of the other group.

The weight gains throughout the period of tests were as follows:

TABLE I.—*Weight Gains*

Diet containing Fortified White Flour		Diet containing Wheatmeal Flour	
49 gm.	Mean of 10 = 63·9 gm. σ = 9·67 ε = 3·058	48 gm.	Mean of 15 = 60·53 gm. σ = 7·03 ε = 1·817
56 ,,		51 ,,	
58 ,,		52 ,,	
58 ,,		56 ,,	
62 ,,		58 ,,	
64 ,,		58 ,,	
67 ,,		59 ,,	
69 ,,		61 ,,	
73 ,,		62 ,,	
83 ,,		64 ,,	
		65 ,,	
		65 ,,	
		67 ,,	
		68 ,,	
		74 ,,	

$t = 1·01$; $P = 0·33$.

TABLE II

	Total Food Fed Throughout the Test (Av. per Rat)	Dry Weight of the Food Given (Av. per Rat)	Dry Weight of the Food Wasted (Av. per Rat)	Food Residue Uneaten at End of Test (Av. per Rat)	Actual Intake of Food
Fortified white-bread diet ..	388 gm.	229·3 gm.	19·3 gm.	6·4 gm.	203·6 gm.
Wheatmeal-bread diet	406 gm.	226·9 gm.	14·3 gm.	1·6 gm.	211·0 gm.

This corresponds to an average weight increase of 1 gramme from a consumption of 3.19 grammes of the white-bread diet and from 3.48 grammes of the wheatmeal diet.

A study of the figures given in Table I shows that there is no significant difference between the gains in weight made by the two groups of animals. The average growth rate is about seven-tenths of the normal for rats of this strain on an unrestricted intake of their adequate stock diet, which is what would be expected having regard to the restriction of food intake in the present test.

Second Experiment: Application to Human Diets

When the experiment just described was being planned it was thought that if its results should show a definite difference between the nutritive values of the two flours it might still be held that this would lose its significance when considering the application to human diets, since man consumes a range of foods not commonly used in laboratory experiments. Concurrently with the first experiment, a second was therefore planned to see how rats would thrive on the same two flours when these were baked into bread and used as a percentage of an ordinary human mixed diet. It was not possible to obtain figures of the wartime consumption of the standard foods, but a formula was chosen based upon the estimated consumption in 1934 (Sir John Orr, 1937) modified, in conformity with present-day rationing arrangements, by reducing the amounts of meat, fish, and eggs, and including greater quantities of potatoes, vegetables, and bread. The diets were as follows:

Bread (fortified white of 75% extraction or wheatmeal of 85% extraction) ..	35·5%	Margarine	3·0%
Boiled potato	30·0%	Cheese	0·7%
Cooked meat	6·0%	Cooked vegetables	14·0%
Fresh milk	3·0%	Jam	1·2%
Cooked fish	3·0%	Eggs	1·2%
		Sugar	2·4%

The bread was crumbed and the other foods were minced. Three batches of food were prepared during the four-weeks test and, except when required for weighing, were kept refrigerated. The meat used was beef on two occasions and mutton on the third. The vegetables were cooked cabbage and other greens; 1 oz. of raw lettuce was included in each batch. The fish was canned herring on the first occasion, canned salmon on the second, and fresh cooked herring for the third batch. The ingredients were mixed by prolonged hand-kneading, and this was continued for half an hour after the diet looked and felt uniformly mixed. Even so, the analysis suggests that the constituents were not distributed perfectly evenly throughout the whole.

The analyses of the diets were as follows:

	White (75% extraction) %	Wheatmeal (85% extraction) %
Protein	8·81	8·15
Oil	6·09	5·09
Ash	0·63	0·67
H_2O	54·30	55·10
Ca	0·19	0·10
P	0·07	0·20

The rats were given these diets for four weeks, beginning when they were 4 weeks old. They were caged singly and weighed weekly, being fed weighed quantities of food as soon as all the rats had completely or almost completely finished the last batch.

The weight gains were as follows:

Mixed Diet, with White Bread		Mixed Diet, with Wheatmeal Bread	
65 gm.	Mean = 65·54 gm. σ = 8·35 ε = 2·52	58 gm.	Mean = 69·64 gm. σ = 7·30 ε = 2·20
58 ,,		59 ,,	
59 ,,		66 ,,	
59 ,,		68 ,,	
61 ,,		68 ,,	
62 ,,		71 ,,	
65 ,,		71 ,,	
72 ,,		72 ,,	
73 ,,		76 ,,	
75 ,,		84 ,,	
81 ,,			

$t = 1·23$; $P = 0·23$.

Each rat received 603 grammes of food during the four-weeks test. The total food wastage (dry weight) of the two groups was very similar—165 grammes for the white-diet group and 151 grammes for the wheatmeal-diet group. There was no residue to deduct at the end.

Discussion

McCarrison's well-known work demonstrated that young rats throve very badly on a mixed diet containing unfortified white bread, mixed with the other staple foods characteristic of those used by the poorest people in this country. The animals showed all the signs of vitamin-B deficiency, and some were ultimately killed and eaten by their fellows.

In the present test, using fortified white bread, no doubt of higher extraction than was used by McCarrison, the results were entirely different. The animals grew and showed every sign of health. Comparison of the growth increments of the two experimental groups shows that between the ages of 4 and 8 weeks rat growth appears to be equally well supported by wheatmeal of 85% extraction or by white flour of 75% extraction fortified with vitamin B_1 when these are mixed with the staple foods into the diets previously described.

Fifty ounces of the mixed diet made up with white bread supplies 2,600 calories, 0.46 gramme calcium, and 79.3 grammes of protein, of which 32.3 grammes is of animal origin. It would thus resemble the diets of Orr's Groups I and II (Orr, 1937) (the lowest-paid groups of the population).

	Calories	Total Protein	Animal Protein	Calcium
Group I (Orr)	2,317	71·6 gm.	50·7 gm.	0·37 gm.
Present experimental mixed diet (50 oz.)	2,600	79·3 gm.	32·3 gm.	0·46 gm.*
Group II (Orr)	2,768	98·8 gm.	80·9 gm.	0·52 gm.

* By calculation.

This particular diet, it should be noted, contains more bread (17.75 oz.) than the average pre-war intake throughout the country (12 oz. daily per head). The riboflavin supplied by these foods in the 2,600-calorie diet would amount to 0.93 mg. (figures from Fixsen and Roscoe, 1940; also some, unpublished, from Dr. Magnus Pyke). Slightly over 16% of this is given by the admittedly large amount of bread. If this were all in the form of wheatmeal the riboflavin it supplies would rise to 23%. The potatoes and vegetables between them supply over 43% of the total riboflavin. The large amounts of bread, potatoes, and vegetables in this diet, and its low animal protein content as compared with those quoted above from Orr's book, are believed to reproduce in the main the changes in our diet during the last two years.

Although we have used considerably more animals than did Dr. Chick and aimed at a stricter control of the other dietary factors that may affect growth, our finding that

wheatmeal bread from flour of 85% extraction and white bread from flour of 75% extraction—fortified in the manner described—do not differ markedly in nutritive value contrasts with Dr. Chick's statement that wholemeal flour of 82% extraction is superior to white flour of 73% extraction corrected for its deficiency of protein, minerals, and vitamin B_1.

A more refined statistical analysis than it is possible to give here somewhat weakens the apparent superiority of the white-flour diet in the first experiment and somewhat strengthens that of the wheatmeal diet in the second, but in both cases the difference between the two diets remains non-significant.

I should like to express my thanks to Dr. D. W. Kent-Jones and to Dr. Magnus Pyke for checking the thiochrome values of the diets used and for their advice and criticism; and to Mr. E. C. Fieller of Boots Ltd., Nottingham, for his statistical analyses of the data.

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A TREATMENT FOR CHRONIC PSORIASIS

BY

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The dermatologist, perhaps more than any of his medical colleagues, views with reserve sweeping claims on behalf of new treatments. The great variation in individual skin sensitivity impresses upon him the truth of the old adage, "One man's meat is another man's poison." Bearing this in mind, I can state that I have been amazed at the uniformity of response of chronic psoriasis to a line of treatment I have recently evolved. The two methods which I have partially combined are those of Madden (1940) and Goeckerman and O'Leary (1932). I will run through these briefly.

Madden's treatment resulted from a most comprehensive investigation of some 259 cases of psoriasis. He divided these into small groups and treated each group by a different method, utilizing the following: vitamin B_1, vitamin B_2, vitamin B whole complex, brewers' yeast, vitamin C, oestrogenic substances, sulphanilamide, bismuth salicylate in oil, anterior pituitary extract, adrenal cortex extract, low-fat diet with vitamin B_1, low-fat diet and liver extract, low-fat diet with vitamin B_1 and anterior pituitary extract, and low-fat diet with vitamin B_1, anterior pituitary extract, and adrenal cortex extract. He came to the conclusion that the best results were obtained with a low-fat diet plus 1,000 international units of vitamin B_1 daily by mouth, combined with an exfoliating ointment. Madden, however, says he realizes that not all cases will respond to this treatment. Goeckerman and O'Leary's line of treatment was as follows: the patient is anointed with a 2% ointment of crude coal tar before retiring at night. In the morning the ointment is removed with olive oil, leaving a thin film on the affected areas, and the body is then exposed to gradually increasing doses of ultra-violet light. In the interval between treatments a bland ointment, such as boric acid salve or petrolatum, should be applied.

Method of Treatment

My method has been as follows. The patient is told to rub 2% crude coal-tar ointment in soft paraffin into all lesions each night. In the morning, with the ointment still on, the patient goes to the ultra-violet radiation department, where the ointment is removed by means of olive oil, a thin film of which is left on; then the ultra-violet irradiation is carried out. This treatment is given every day. At the same time the patient takes 1,000 units of vitamin B_1 by mouth daily. In some cases the ointment is so removed by movement in bed at night that it has to be reapplied in the morning before going to the radiation department. In other cases in which there are particularly thickened lesions I add 20 to 30 grains of salicylic acid to the tar ointment and advise the patient to scrub off the scales with a stiff brush or by the use of pumice stone. The ointment is reapplied after this exfoliating treatment, and then the radiation treatment is carried out as above. In certain cases I have used, in addition to the above measures, 300,000 units of vitamin D daily, but I have found that patients who have not had this have done just as well as those who have.

A word of warning must be given: care should be exercised in the treatment of children by this method, as the danger of lighting up a tuberculous focus is always present when general light baths are taken by young people.

Commentary

I have treated some 53 cases in this way. Admittedly the number is not large, but I have watched the condition gradually disappear in *every* case. Furthermore, the patients tell me from their own experience that they have never been so clear in the whole of their psoriatic life, and, incidentally, have never felt so well before. I am convinced there is a future for this method. The only drawback I can see is difficulty of daily attendance for radiation treatment. As, however, more and more large factories, etc., have increased facilities for their workers, including ultra-violet irradiation, something may yet evolve to overcome the loss of time at work. It is necessary to insist on *daily* ultra-violet irradiation, as the treatment will not produce the same results if it is given only once or twice a week. This I have proved.

A good many of the patients who received treatment and responded to it have had psoriasis for over 40 years, 30 years, 20 years, 16 years, and lesser periods. They had been constant in their attendance for treatment, and the measures which they had resisted included exfoliating salicylic and tar ointments, cignolin, etc., high-vitamin dietary, protein-shock therapy (T.A.B. vaccine, aolan, peptone, and whole blood), ultra-violet radiation, autogenous vaccines, oestrogenic substances, tar baths, *x*-ray therapy, and, in one instance, a course of gold therapy (using solganal B oleosum).

I cannot dogmatize on the prognosis of these cases, but from past experience it has been learnt that once a case of psoriasis has been *completely* cleared that case may remain clear for some considerable time. Should there be a recurrence the patient is warned to attend for treatment immediately, and the prospect is that the condition can be brought under control rapidly while it is still of small extent.

I know that psoriasis can clear for a time without treatment and with almost any treatment, but when it starts to clear in every resistant case dealt with as above I think the treatment must take the credit. Now that I have stated that so far no snags have been encountered I expect they will begin to arrive, but it is the *universal* response to the line of treatment which has caused me to write this short paper.

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Medical Memoranda

Cysticercosis Epilepsy treated with Sulphathiazole

The recent articles by Blythe (*British Medical Journal*, 1941, **1**, 401) and Ewing (ibid., 1941, **2**, 263) prompt me to record the following case under my care.

Previous History of the Case

A man aged 29 was found unconscious in Sutton Park at 11.50 p.m. on June 29, 1941. He was taken to Sutton Coldfield Cottage Hospital, and transferred to Great Barr Park Colony the following day. He remembered leaving camp on June 29 at 4.30 p.m. and going to Birmingham, and nothing more. There was a slight smell of alcohol in his breath.

The personal history was as follows. No illness as a child. In 1930 he joined the Royal Navy and saw service in the Mediterranean, in 1932 in the Baltic, and in 1935 in China. In 1937 he returned to civilian life, where he worked in Bedfordshire, labouring until 1939. In 1939 he joined the Army and has served at home since.

In 1935, while serving in China, he suffered from "a tropical disease"; he did not know what it was and he is unable to remember the symptoms. Subsequent to this on seven occasions he has had an attack of loss of consciousness with complete amnesia of the incident. Since 1935 he has complained of headaches and mental depression. He has also noticed that on each occasion preceding his seizure the headaches have increased in severity and culminated in the fit. There was no history of vomiting or otorrhoea; he has never suffered from meningitis.

Condition on Admission

His I.Q. falls within normal limits; he is dull and somewhat apathetic. He sleeps quite a lot; often asks for some tablets to make him sleep, but he is asleep before the tablets can be procured. His memory on the whole is fairly good, but he is unable to give many details about himself. No family history of mental disease or of convulsions could be obtained.

Examination of Nervous System.—Pupils equal and responded to light and to accommodation, and ophthalmoscopic examination showed blurring of both disks on the nasal side; also venous pulsation on the right side. Nothing else abnormal found on examination of the cranial nerves. Upper extremity: Power and muscle tone normal and equal on both sides; reflexes average and equal on both sides; no sensory loss; joint sense and muscle sense normal; co-ordinated movements normal; no astereognosis. Abdominal reflexes were normal on the right side but diminished on the left. Lower extremity: Power and muscle tone appeared normal, with no perceptible difference on the two sides; no sensory loss; co-ordinated movements normal; joint sense and muscle sense normal; knee-jerks somewhat increased on both sides, especially the left; ankle-jerks increased, especially on the left side; plantar reflexes, right flexor, left extensor; ankle clonus not obtained; no Rombergism; sphincters normal.

General Examination.—Nothing abnormal found on clinical examination of the heart, lungs, and abdomen; no albuminuria; no glycosuria. Blood pressure: systolic 130, diastolic 88. Blood: Wassermann, negative; Kahn, negative; gonococcal fixation test, negative. Blood film, differential count of leucocytes: polymorphs—neutrophil 58%, eosinophils 6%; monocytes 19%, lymphocytes 17%. A slight increase of eosinophils and a marked increase in the monocytes.

Cerebrospinal Fluid.—Colourless and clear, definitely under increased pressure, degree not measured; cells, 2 per c.cm.; protein, 35 mg. per 100 c.cm.; chlorides, 720 mg. per 100 c.cm.; reducing substance present; Lange gold curve, no change; Wassermann negative in all directions; direct film, no acid-fast bacilli or other organisms seen; culture, no growth.

X-ray Examination.—Head, thorax, and extremities were all radiographed for the presence of cysts. In the left lung there was a cyst about the size of a five-shilling piece, which showed the features of a hydatid cyst. There was also a suggestion of an infected left maxillary antrum. Nothing else abnormal was found.

In view of these findings it was considered that the symptoms were due to the presence of a hydatid cyst of the brain.

Treatment Adopted

The report of a case reached me (verbally) of a hydatid cyst of the liver which, at operation, had secondarily infected the peritoneum and had been exposed to sulphonamide treatment (given primarily for a superimposed secondary infection). In this case it was found that the daughter cysts in the peritoneum were being discharged through the wound in a shrivelled condition, and, further, the percentage of sulphonamide in these daughter cysts was greater than that in the blood stream. The effect of chemotherapy was therefore tried in this case, the preparation used being sulphathiazole (M & B 760).

On July 9 the patient was given four tablets (2 grammes), and this was followed after six hours by two tablets (1 gramme) four-hourly for forty-eight hours. This in turn was followed by two tablets six-hourly for forty-eight hours, and the course was completed by giving two tablets three times a day for a further three days. At the end of the week (July 16) the man was re-examined. He was no longer complaining of headaches. There was no mental depression and he was no longer apathetic, nor did he sleep to an abnormal degree. There was a great change in his personality. He became bright and cheerful, and he took a natural interest in the comings and goings in the wards. His abdominal reflexes on the left side, which had been sluggish, reacted normally and equally with those on the right. His left plantar reflex, which had been extensor, now became flexor. His ankle-jerks and knee-jerks on the left side became equal with those on the right, but both remained rather more active than normal. Both disks showed blurring on the nasal side.

The findings were thought to be so promising that it was decided to repeat the course of sulphathiazole. On July 27 this was given as before, except that instead of terminating on the seventh day the course was continued until the twelfth day. On August 8 the patient was re-examined. The improvement had persisted, and the only abnormal findings were that the disks showed some blurring on the nasal side and the knee-jerks and ankle-jerks on both sides were still somewhat overactive. A differential leucocyte count was made: polymorphs—neutrophil 61%, eosinophils 0%; lymphocytes 34%, monocytes 5%. The monocytes had returned to a normal percentage. No eosinophils were formed. A further radiograph of the lungs was taken under conditions (kV, mA, time exposure, and distance) similar to the first picture. It was found that the cyst was less obvious than in the first picture: it was, however, still present. The size as depicted on the radiograph did not appear to be materially altered.

I fully realize that enough time has not elapsed since the treatment was started to allow any conclusions to be drawn. However, in view of the recent articles on cysticercosis epilepsy and the possibility of an approach to it by chemotherapy, I thought this case interesting enough to quote. I would be grateful for any comments.

I must thank Dr. D. M. Macmillan, medical superintendent of this Colony, for permission to publish this case, and also my colleagues for their advice and helpful criticism.

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Giant Hydrocele successfully treated by the Sclerosing Method

I have now treated seventy-four cases of hydrocele of the tunica vaginalis, some at the Injection Clinic at the Southend General Hospital and some in private practice, with complete success in every instance, although in about one-third of the cases more than one injection proved necessary in order to effect a complete cure. It takes on an average about three months for a hydrocele to be cured by this method.

The technique is simplicity itself; it consists in tapping the hydrocele and withdrawing all the contained fluid, and then

injecting into the sac 4 c.cm. of lithocaine (lithium salicylate 30% and tutocain 1%), followed by 2 c.cm. of quinine-urethane. The parts are thoroughly massaged after the injection, and the patient is ordered to wear a testicular support. A week later the fluid which accumulates in the tunica vaginalis as the result of chemical irritation of the delicate endothelial lining is cautiously aspirated.

The following case is of great interest, as it proves conclusively that a hydrocele of enormous proportions and of many years' standing can be treated successfully by the sclerosing method.

Case Report

The patient, aged 42, consulted me on August 2, 1939, complaining of an "enlarged testicle." He had first noticed the swelling in 1928, but it had not increased much in size until the last three years. It then grew rapidly and caused a great deal of embarrassment on account of its weight and gigantic size. In spite of the fact that he was short, stout, and very stockily built, with consequently loose-fitting clothing from the waist down, it was apparent the moment he entered the room that there was something very abnormal amiss, and when he sat down it looked as if he was carrying a football in his left trouser pocket.

Examination revealed a giant hydrocele of the following dimensions: length 10¾ inches, circumference 17½ inches. When tapped, 64 oz. of typical straw-coloured hydrocele fluid was evacuated. After the tapping was completed 5 c.cm. of quinine-urethane was injected, followed by 10 c.cm. of lithocaine. This mixture was thoroughly agitated inside the sac, and the patient was then sent home and told to retire to bed early in the evening.

On September 16 a second tapping was carried out, and 24 oz. of fluid was withdrawn. This time I injected 2 c.cm. of quinine-urethane and 8 c.cm. of lithocaine into the hydrocele sac. On October 23 a further 12 oz. of fluid was withdrawn, and another combined injection was given. The patient was told to return in six months' time, and when he did so, on April 24, 1940, I was disappointed to find that the hydrocele, although much smaller, was still present and appeared to have a very thick wall. He was tapped once again, 10 oz. of fluid being obtained, and a further injection of the two sclerosing media was undertaken. I did not see him again until May, 1941, when I was agreeably surprised and pleased to find that I had at last effected a complete cure by the injection method. The testicle on the left side was then of normal size, and there was no undue thickening or discomfort subsequent upon the extensive fibrosis which had occurred.

The patient was examined by Mr. Rodney Maingot at the Southend General Hospital in July, 1941, when it proved impossible on clinical examination to ascertain on which side the hydrocele had been, thus suggesting that a complete cure had been achieved.

Hadleigh, Essex. W. L. James, M.R.C.S., L.R.C.P.

Transient Blindness following Blood Transfusion

The following is an interesting case of blindness after blood transfusion.

Case Report

A man aged 42 was admitted to hospital on May 29, 1941, complaining of flatulent dyspepsia, loss of weight, and weakness. Clinical examination showed marked anaemia and obvious loss of weight. There were no abnormal physical signs in the respiratory, cardiovascular, or central nervous system. There was, however, an indefinite mass palpable in the epigastrium with some tenderness and muscular guarding over this region. He was put on Meulengracht's diet with alkalis.

The reports of the radiological and laboratory investigations were as follows. Barium meal: marked delay in emptying of stomach; pathological stenosis of the pyloro-duodenal region, nature not manifest, but could be the result of ulceration or of neoplasm, the former being the more likely. Blood picture (May 30): Red cells 2,700,000; white cells 8,000; haemoglobin 50%; film showed anisocytosis and central pallor of the red cells. Fractional test meal showed low total acidity, rising to a maximum in two and a half hours: free HCl 0.2%; total acidity 0.45%. Wassermann reaction negative. Blood pressure 108/62. Urine: deposit consisted of urates only; no albumin or sugar present.

On June 9 the patient was given a blood transfusion of Group O (IV) blood with a view to improving his condition preparatory to laparotomy. The blood was given at the rate of 2 c.cm. per minute approximately, without incident. Fifteen minutes after the completion of the transfusion he had a very slight rigor, but no rise in temperature; this lasted about ten minutes, after which the patient slept. An hour later he awoke and complained that he was blind. On examination there was no perception of light, his pupils were dilated but reacted to light; there was no evidence of arteriospasm or of retinal haemorrhages on examination of the ocular fundi, and the disks appeared normal. Fifteen minutes later perception of light returned, and after a further thirty minutes he could perceive objects. His vision then improved steadily until one and a half hours after the onset of the condition it was normal. The patient's general state remained very good throughout, and no other physical signs were discovered in his central nervous system. On the following day the urine contained a considerable quantity of blood and albumin, but this cleared up in twenty-four hours.

Clinically, the patient appeared to be very much improved after the transfusion, but the blood count showed: red cells 2,000,000, haemoglobin 50%, blood urea 64 mg. per 100 c.cm., blood non-protein nitrogen 55 mg. per 100 c.cm.

Unfortunately it was not possible to test the donor blood against that of the recipient. The recipient's group, however, was O (IV), as was the donor's blood.

Discussion

The possible causes of this reaction, in view of the transient nature of the blindness and the absence of positive findings by ophthalmoscopic examination, were considered to be: (1) oedema of the optic tracts; (2) arteriospasm associated with hypertension; (3) arteriospasm following severe blood loss; (4) air embolus; (5) uraemic blindness.

1. It is difficult to see how oedema of the optic tracts would have affected the optic nerves without producing other evidences of oedema in the central nervous system and elsewhere, and one would expect to find some evidence of such a condition on ophthalmoscopic examination.

2. Arteriospasm associated with hypertension can be excluded, since the patient's blood pressure was 108/62 before the transfusion and not materially different twenty-four hours later.

3. If arteriospasm following severe blood loss was the cause one would expect to find evidence of arteriospasm in the retinal vessels, but this was not present; also there was no sign of recent severe haemorrhage.

4. While air embolus is a possibility, air which enters the circulation during transfusion is almost certainly absorbed before reaching the arterial circulation and usually produces symptoms in the right ventricle or pulmonary circulation. Further, the bilateral blindness in the absence of other symptoms is difficult to explain on these grounds.

5. Uraemic blindness is also a possibility in view of the somewhat raised blood urea and N.P.N., but no other signs or symptoms of uraemia developed subsequently.

From these observations it will be seen that no definite aetiological factor has been decided upon. It would be interesting to hear if any readers have had similar cases, and whether they have been able to explain them. One fact should, however, be noted—that is, in this case vision was normal in about three hours, whereas in cases of transient blindness previously reported it has persisted for longer periods, even up to twenty-four hours.

I am indebted to Prof. T. B. Davie for his assistance and advice, and to Dr. R. A. Grant, medical superintendent of the Birkenhead Municipal Hospital, for his permission to publish this case.

Dermot Lehane, M.B., Ch.B., B.A.O.,
Resident Medical Officer, Birkenhead Municipal Hospital.

Reviews

AETIOLOGY OF ACHOLURIC FAMILY JAUNDICE

On the Aetiology of Acholuric Family Jaundice. By T. W. Lloyd. (Pp. 51.) Oxford University Thesis. 1941.

The practice of printing M.D. theses so that they are available to the general reader is, unhappily, less common in this country than it used to be in France. We are therefore grateful to Dr. T. W. Lloyd for printing his thesis on the aetiology of acholuric family jaundice and sending copies to medical libraries. The thesis begins with a brief history of the development of our knowledge of acholuric family jaundice. The author makes the point that, though the effectiveness of treatment by splenectomy has been known for thirty years, this therapeutic triumph has not led to the same advances in knowledge of pathogenesis as have the liver treatment of pernicious anaemia and the insulin treatment of diabetes mellitus. The clinical features are then summarized: a hereditary incidence, bilirubinaemia with a tendency to cholelithiasis, splenomegaly, and an anaemia characterized by reticulocytosis, spherocytosis of the red cells, and a diminished resistance to haemolysis by hypotonic saline solution. The main purpose of the research has been to explain the cause of the increased haemolysis and the benefit of splenectomy. Two techniques have been used. The first is the analysis of Price-Jones curves by Mogensen's technique, by which it is possible to decompose asymmetric distribution curves into their component parts, and thus analyse the effect of procedures such as splenectomy and transfusion. The other method is the use of the reticulocyte percentage and the time of maturation of the reticulocytes as a measure of the rate of haemolysis. Both methods are indirect and open to criticism, but the results obtained justify the conclusion that there is a permanent abnormality in the red blood cells in acholuric jaundice, which persists after splenectomy, and that this can be separated and distinguished from the haemolytic action of the enlarged spleen.

The technical methods used are of much interest, for haemolysis is now one of the most insistent haematological problems, owing to its importance in relation to blood storage, blood transfusion, and the tropical anaemias, and workers in this field should find the thesis of considerable value.

MEDICINE AND HUMAN WELFARE

Medicine and Human Welfare. By Henry E. Sigerist, M.D., D.Litt. (Pp. 145; illustrated. 16s. 6d. net, or $2.50.) New Haven: Yale University Press; London: Oxford University Press. 1941.

Dr. Sigerist, the distinguished professor of medical history at Johns Hopkins, has taken the opportunity afforded by the Terry Lectures to discuss the relations between medicine and human welfare by means of a historical survey. His conclusions may be briefly paraphrased thus. As long as disease was regarded as due to a spell from without, the only point in diagnosis was to determine whether that spell was cast by a supernatural agency or another human being; the patient's main interest was in prognosis: he wished to know what the gods had in store for him. Even the scientific Hippocratic schools laid great emphasis on prognosis. Now disease is recognized as the sum total of abnormal reactions of the organism to abnormal stimuli, but when this biological process occurs in man it always involves the mind. When man suffers he is helpless and afraid; disease reminds him that he is mortal. He reverts to primitive methods of thought which break through the thin crust of education, and even rationalists become mystics.

The Greek world exalted the healthy, while in the Christian world there was a tendency to glorify suffering. But suffering is not in itself meritorious, and it is an obvious indictment of society that we have not yet learned to apply science and social planning adequately to the problem of unnecessary suffering. In a world that is ruled by iron economic necessity, unemployment through ill-health is responsible for a vast amount of economic and moral distress. As long ago as 1847 Neumann maintained that, as the State regarded protection of property as its duty, it should protect health, which was the only property possessed by many of its members. It is interesting to learn that Virchow by no means confined himself to pathology but joined whole-heartedly in this campaign during the revolutionary stir in Germany. "Medicine is a social science," he declared, "and politics is nothing else but medicine on a large scale." The German revolution of 1848 collapsed and with it the health movement declined. But it rose again all over the world; after many centuries of Christianity the idea has become generally accepted that everybody, whether rich or poor, should have all the medical services he needs. How this is best accomplished is a matter of acute controversy, as our correspondence columns have borne abundant witness. Dr. Sigerist is clear that the position of the medical man will be profoundly altered, and that too many take a legendary sentimental and romantic view of their profession, to which they cling desperately and which determines their actions—a hard saying because it has some sting of truth. The physician of the future will lose many social advantages, as the Royal Academicians have already done. But "tho' much is taken, much abides" in expanding spheres of useful activity.

It is a pity that such a high price has been fixed for a book of only 145 pages, as this will limit the spread of its wisdom and influence.

PROBLEMS OF HOME GUARD MEDICAL SERVICES

Medicine versus Invasion. The Home Guard Medical Service in Action. An Essay in Casualty Service Tactics for R.A.M.C., Home Guard, and Civil Defences; together with Military Appreciations and First-aid Manual for Modern Warfare. By G. B. Shirlaw, L.R.C.P., and Clifford Troke. (Pp. 208. 7s. 6d. net.) London: Secker and Warburg, Ltd. 1941.

This is a most stimulating book, published at a most appropriate time. That Home Guard medical officers are seeking instruction on invasion problems is clear from the fact that for the first special course arranged for Home Guard medical officers there were 160 applications for 40 places.

Britain is a fortress, but only because its towns and villages are manned by the Home Guard. The morale of the Home Guard, if nothing else, depends on an efficient and elastic medical service. Civil Defence, to which the Home Guard's own organization must be "buttoned," was devised more to meet the problems caused by aerial bombardment of centres of population rather than those which would inevitably follow the invasion of sparsely inhabited areas. It is from these premises that Dr. Shirlaw, well known as the author of that excellent book on the medical aspects of Civil Defence entitled *Casualty*, and Mr. Troke, staff officer of the Finsbury Casualty Services, proceed, with the valuable reinforcement of Dr. Shirlaw's experiences in Spain. They analyse casualty service tactics and probe the problems of Home Guard medical services in rural and urban areas. They seek to provoke discussion, and to provide the basis upon which the needs of all types of area can be satisfied.

One's first reaction to the section on "Military Appreciations," with its illustrative battles, is that this is a military

rather than a medical subject. A closer study convinces one of the value of its arguments to both combatant and medical officers. The first-aid section is adequate, laying stress on the problems of immediate treatment.

This is no book for the complacent—or perhaps it is. It is clear, concise, and deliberately realistic. It is well constructed and well written. As Tom Wintringham puts it in his introduction, this book can be recommended to every citizen "who can help to ensure that our wounded fighting men or civilians get what they deserve in the way of aid and comfort."

Notes on Books

Prof. J. B. S. HALDANE is a doughty controversialist, and his essays entitled *Science in Peace and War* (The Scientific Book Club, 111, Charing Cross Road, W.C.2) are frankly tendentious; naturally so since they first appeared in the defunct *Daily Worker*. Even in the chapter on human physiology the bad capitalist baron is revealed lurking behind the scenes waiting to injure the virtuous worker. People who are honest with themselves must recognize that emotion colours their views—witness the heightened appreciation of Soviet scientists in this country since last June. But it is unusual for a man of the intellectual ability of Prof. Haldane to see everything in such sharply contrasted tones of plain black and white. Each chapter is full of useful information and then ends with a Marxian moral. Interspersed with scientific facts we find such statements as that the classification of animals and plants was invented at the same time as the chronometer because both were needed for the purposes of imperialism (p. 90). But when he writes on page 209, "Our rulers [are] sabotaging the war effort . . . largely through sheer blind hatred of the workers," Prof. Haldane rules himself out of court.

Good Health on War-time Food, by BARBARA CALLOW, M.A., M.Sc. (Oxford University Press, 6d.), gives a short account in very simple language of what is meant by body-building foods, energy foods, and protective foods, and contains many practical hints for making the best use of the food available at the present time. It is evident that the author herself is tackling the problem with courage and real enjoyment, and her book should put fresh heart into numbers of housewives who are only too anxious to feed their families well but who do not always know just how to do it.

In his book *Diet in Sinus Infections and Colds* Dr. E. V. ULLMANN made a useful contribution to the study of the relationship between general disorders and local disturbances of the nasal mucous membrane, and argued effectively that laryngologists should pay more attention to diet when treating sinus troubles and recurrent nasal catarrh. Since the first edition appeared in 1933 there has been much wider recognition of the part played by dietary habits in building up resistance against infection, and as a result the surgical approach to sinus disease has declined in favour of more conservative methods that take into account habits of life, constitutional defects, a deficiency of vitamins, and other dietetic errors. In preparing a new edition (Macmillan and Co., 8s. 6d.) Dr. Ullmann has made some changes in the dietetic treatment recommended, but basically the book remains the same. He has added chapters on mother's milk, on allergy, and on vitamins, with special reference to vitamin A.

The *Bulletin of War Medicine*, under the auspices of the Medical Research Council, is edited by Sir H. Harold Scott and his colleagues at the Bureau of Hygiene and Tropical Diseases. The Index to Volume I (Nos. 1-6), 1940-1, of this valuable publication has now been issued at 6d. by H.M. Stationery Office.

Martin Croft, by JOSEPHINE BELL (Longmans, Green and Co., 8s. 6d.), is a straightforward novel of modern times with a largely medical background. The people and situations are clearly depicted and the writing is commendable. A warped and self-torturing medical man (apparently a hospital physician, but the point is left obscure) gives his name to the title-page. He and his Victorian period-piece wife—a bad domestic tyrant—are shown against some more attractive human figures, including Dr. Croft's two medical housemates in the Harley Street area, and the girl who acts as secretary to all three doctors and holds the centre of the stage through most of the book. One of the secondary figures is a very nasty unqualified mental healer, who gets his deserts in the long run; there is also an attractive and virile young American with a gift for healing. The author is already known as a competent practitioner in the detective story line. This is a book in which criminal business plays a very subordinate part, the chief motive being the portrayal of character and temperament in the years just before the war, and it ends with the return of Dr. Croft, his outlook changed, from the beaches of Dunkirk.

Preparations and Appliances

A USEFUL SPECULUM

Mr. JOHN STALLWORTHY, F.R.C.S., Oxford, writes:

The following very useful modification of Graves's vaginal speculum (Fig. 1) will commend itself widely to general practitioners as well as to those who specialize in gynaecology. The disadvantage often experienced with a metal speculum is the difficulty in obtaining illumination of the cervix and vault. This difficulty has been met by making the lower blade of the speculum of curvlite. By means an indirect illumination is provided. The power for the light can be obtained from dry cells, or from an electric main if a suitable transformer is used.

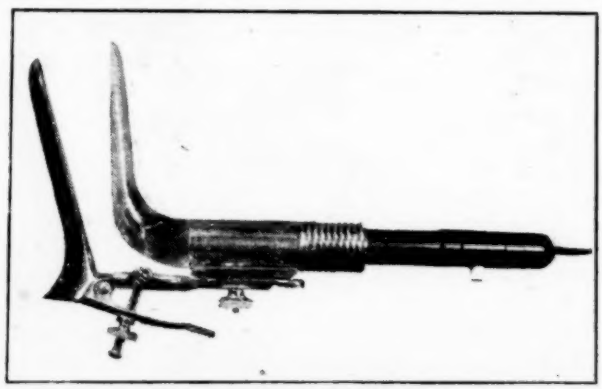

FIG. 1. (Patent No. 540,806.)

FIG. 2.

FIG 3.

An extensive trial of this instrument has proved it to be most efficient. Although metal and curvlite join together in the one instrument it can be sterilized by boiling without any dismantling. In place of the screw handle illustrated in the

photograph one fitted with a slot can be obtained. This is of advantage when the instrument is being used in a busy clinic.

Figs. 2 and 3 show the speculum in use, the latter being a photograph taken with the illumination provided by the instrument itself.

The new speculum is made by Vann Bros., Ltd., and can be obtained from them at 63, Weymouth Street, London, W.1.

A SINGLE OR BILATERAL BÖHLER BRAUN LEG SPLINT

Mr. R. BERTRAM BLAIR, M.B., F.R.C.S.Ed., surgeon to the Hull Royal Infirmary Fracture Clinic, and Dr. NORBERT KLEIN write :

We wish to introduce to those who are interested a simple kind of leg splint made after the Böhler Braun type.

FIG. 1.

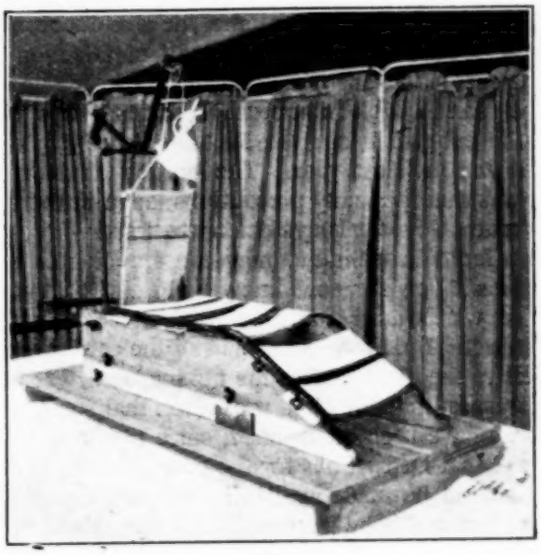

FIG. 2.

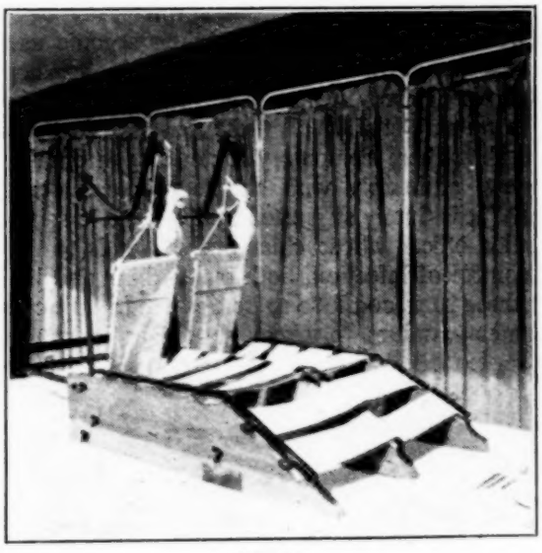

FIG. 3.

FIG. 4.

In our "blitzed area" it was soon found that the demand for the Böhler Braun was far greater than the supply. The shortage may have been due to the difficulty in obtaining the necessary labour, but probably more especially due to the lack of the raw material. In addition, the question of cost became an important factor. These considerations led to the idea of devising a simple, readily made splint. With the collaboration of the joiner at a base hospital a splint was made; and after try-outs and repeated alterations we produced a single leg splint which could readily be turned into a bilateral when found necessary. Our experience of air-raid casualties satisfied us that the effects of many "incidents" demanded the use of a bilateral leg splint, as many casualties arrive with fractures of both limbs.

It is claimed that the splint is practical, easily manufactured, and comparatively cheap. The material required is as follows:

- 8 ft. 1½-in. red deal 8 in. wide by 5/8 in. thick
- 3 ft. red deal 5 in. wide by 5/8 in. thick
- 14 ft. bar iron 3/16 in. by 3/4 in.
- 8 ft. bar iron 1/2 in. by 3/16 in.
- 6 pulleys
- 2 dozen bolts and iron nuts
- 8 corner iron chips

The splint can be made in a hospital workshop at little cost, the material costing no more than 25s. Tarran Industries, Ltd., Hull, have made for us a more finished splint which would cost £2 15s.

The advantages of the splint are that it can be turned out in bulk at £2 15s.—that is to say, at half the cost of any such splint on the market; that it is transportable—when folded up it is parcelled into a space of approximately 33 × 12 × 5 in.

The photographs show the splint ready to be assembled, as a single unit, as a bilateral splint, and actually in use.

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NEW RULES FOR ASEPSIS

It has become abundantly clear in recent times that "hospital infection" is by no means a thing of the past. It must always have existed, although remaining mostly unrecognized, in "septic" wards, but it has now become a major problem in hospitals dealing extensively with casualties. The detailed study of wound flora, and in particular the typing of haemolytic streptococci, have made it possible to trace the spread of infection from case to case: that this is a frequent occurrence and may involve considerable numbers of patients was shown by the investigations of A. A. Miles and others published in this *Journal*[1] last year. The burden of their argument was that the many precautions taken in the operating theatre do not always extend to ward work, where various faults in technique may cause avoidable wound infections. Few surgeons know everything that goes on in their wards, and many details connected with the sterilization of various materials and the care of wounds are left to the discretion of the nursing staff. It is with no disrespect to the nursing profession that some of their methods have been condemned, since they may reasonably ask that instructions for the proper conduct of such work should be made available; nor are they, in fact, by any means wholly responsible for the defects in technique which have been brought to light. There is need, in fact, for a thorough review of aseptic technique in the light of modern knowledge. So far as it concerns ward work, and as the direct outcome of recent research, this need has been met by the publication of *The Prevention of "Hospital Infection" of Wounds*,[2] a memorandum sponsored by the War Wounds Committee of the Medical Research Council and the Committee of London Sector Pathologists. This furnishes in simple language full instructions for the conduct of dressings, the sterilization of all ward apparatus and materials, and other precautions necessary to safeguard wounds from extraneous infection. It should be widely studied, and may well serve as the basis for generally accepted hospital rules or, indeed, be adopted *in toto* for that purpose.

The chief instructions for avoiding contamination by dust and by droplet infection are already widely observed. Apart from the oiling of floors, it is laid down that sweeping and bed-making should be finished an hour before dressings are begun, and that during the dressing itself bedclothes should be moved gently. Closed plasters are a prolific source of dangerously infected dust, and should be opened only in a special room. A pattern is given for a simple and effective mask, and masking of the staff and silence on the part of other patients are enjoined during the conduct of dressings. The method of doing dressings requires two people, and may be considered too elaborate for universal employment; on the other hand it is carefully thought out, and every step has its reason. The operator is not required to "scrub up," but merely to wash his hands; he works entirely with forceps, and should not touch the wound and the surrounding skin, the inner dressing, or any sterile material. It should be noted that this technique demands a generous supply of forceps and certain utensils; a shortage in this direction is the most easily remedied source of difficulty and consequently of danger. Some may wish to vary these instructions, but if so they will do well to bear in mind their underlying principle: that the hand should never touch either the wound or anything supposed to be sterile. The observation of this single rule would perhaps do more than anything else to prevent avoidable wound infections. It is also pointed out that contamination of wounds may take place when they are handled by others than the ordinary surgical staff; precautions must therefore be taken when calling in the services of the radiologist, masseuse, or physiotherapist.

It is now notorious that infection has frequently been transmitted by utensils and other materials which are believed to have been sterilized but have not. Baths of various kinds have played a sinister part in this connexion: a full-sized bath must be treated chemically, and rubbing over with strong lysol is recommended. Arm baths must, if necessary, be treated in the same way, but it is far better to boil them; another strong injunction given is that every ward should possess a sterilizer of such a size that it can contain all bowls, dishes, and other such utensils which require sterilization. Heat is preferable to chemical disinfection whenever it is feasible, and full instructions are given for the proper use of the autoclave; four alternative methods are offered for the sterilization of syringes by heat. There is nevertheless an appendix on chemical disinfectants, dealing only with the three principal types of coal-tar origin, with instructions for their specific uses, and the suggestion that some such instructions should be posted up in every ward. The intelligent co-operation of the nursing staff in all these matters can be secured by teaching them elementary bacteriology from this point of view, preferably with simple practical demonstrations. It is finally suggested that a large hospital needs a senior officer whose chief business it is to supervise the control of infection, both by teaching and by seeing that these rules continue to be observed. We commend this memorandum very strongly to surgical staffs, with the suggestion that they either adopt its rules or make better ones if they can.

[1] *British Medical Journal*, 1940, **2**, 855, 895.
[2] M.R.C. War Memorandum, No. 6, H.M. Stationery Office, 1941, price 6d.

SCIATIC PAIN

Sciatica is not a clear-cut syndrome. The only constant symptom is pain, but from time to time and from patient to patient even this varies as much in its localization as in its severity. The pain may or may not be accompanied by scoliosis, muscle wasting, weakness, absence of the ankle-jerk, or a host of eponymous physical signs with a value in inverse ratio to their number. The most interesting feature of the condition known as sciatica is that nearly every one of the symptoms and signs is largely inexplicable at present.

Sciatic pain is distressingly common and very crippling. It has always been grouped in a class with the equally unexplained pains of lumbago and brachial neuritis. As with them, though there are many known causes of the pain, the greater number of cases have had to be termed "idiopathic." Unfortunately most of the known causes are serious and often fatal conditions. It must be remembered that a minority of the patients with sciatic pain will be suffering from neoplasms of the spinal cord or its coverings, or from invasive new growths in the region of the sciatic nerve itself. Happily this minority is very small, but it is large enough to demand full clinical, radiological, and pathological investigation of any patient with sciatica whose pain has lasted more than about three months, especially if the onset was gradual and if there are signs of impaired conductivity in the nerve or its branches. The recent interest shown on both sides of the Atlantic in prolapse of the nucleus pulposus of the intervertebral disk has thrown much light upon a small number of chronic and persistent cases.[1] But, as Barr and his colleagues[2] insist, this is a very rare lesion and one which a busy general practitioner is unlikely to meet with more than once in his lifetime. Kellgren[3] has recently reported the discovery of fifteen cases of disk prolapse in as few as seventy cases of sciatica. This unduly high incidence must not be regarded as typical, however, and it could have occurred only in the unusual circumstances of a specialized neurosurgical or hospital research unit.

The big problem facing the general practitioner and the general physician lies in the vast majority of the patients in whom a diagnosis of "sciatica" is made. Their sciatic pains, for lack of better knowledge, have had to be labelled "neuritis," "inflammatory," or even "idiopathic." These patients account for at least nine-tenths of the sufferers from sciatica, and anything which will help to elucidate their symptoms will be of great value. Often enough an unsatisfactory diagnosis is the result of an inadequate physical examination, and the patient has been treated by placebos or by empirical physical measures directed towards the sciatic nerve itself. As James Cyriax has pointed out,[4] the sciatic nerve is probably the most innocent of all the structures that may be causing the pain. What is needed is a thorough clinical examination to determine the site of the causative lesion, the nature of which still unfortunately eludes us. Cyriax clearly outlines how this should be done, basing his methods of clinical investigation upon the work of Sir Thomas Lewis[5] and of J. H. Kellgren.[6] These observers showed that the commonest explanation of "idiopathic" sciatica is that it is a referred pain arising from lesions of muscle, ligament, or fascia around the pelvis and lower lumbar spine. Such pain has been produced experimentally by Kellgren[7] by injecting very small quantities of hypertonic saline into the erector and other muscles of the lumbar spine. What is perhaps even more important, he has relieved, and has even permanently cured, some cases of sciatica and "neuritis" by injecting local anaesthetics into tender spots in these muscles. The introduction of the needle into the tender spots has reproduced the pain of which the patient complained, and the injection into that point and nowhere else has relieved it. Cyriax now gives us a detailed account of the way in which the site of these lesions may be determined. It is important to note that his clinical examination is detailed and thorough. Many will differ with him over the interpretation of the physical signs which he discusses, but no one can deny the importance of the fact that in this large group of patients the site of the causative lesion may usually be found with considerable accuracy.

The major problem remains. The diagnosis of the site of the lesion, accurately as it may be made and as accurately confirmed by the results of the injection of local anaesthetics, is only half the battle. For what, after all, is "myositis"? How, if at all, does it differ from "fibrositis"? How long will both these terms have to remain names entirely devoid of pathological significance? As each year passes the number of such names increases. "Panniculitis" and "perineuritis" are fairly well established though quite devoid of meaning in terms of morbid anatomy. Obviously the next step lies in the direction of pathology. In the meantime, we may be thankful for further help in the problem of anatomical diagnosis.

[1] See *British Medical Journal*, 1940, **2**, 708.
[2] *J. Bone Jt. Surg.*, 1937, **19**, 323.
[3] *Lancet*, 1941, **1**, 561.
[4] *J. chart. Soc. Mass. med. Gym.*, 1941, **26**, 230, 253; 1941, **27** 8.
[5] *British Medical Journal*, 1938, **1**, 321.
[6] Ibid., 325.
[7] *Clin. Sci.*, 1937, **3**, 175.

HYALURONIDASE

A process which may be of some importance in several acute infections and has hitherto been very imperfectly understood seems now to be undergoing rapid elucidation. The story goes back to the discovery by Duran-Reynals in 1929 of the "spreading factor" which has since been associated with his name; this was contained in a watery extract of testicle, and caused the widespread and rapid diffusion in the tissues of any particulate material injected with it, including micro-organisms, which consequently produced abnormally extensive lesions. It was shown by variations on this form of experiment that the only action of the spreading factor was to increase tissue permeability. Testicle is the only tissue containing it in considerable amount, but four years later Duran-Reynals showed that a substance having the same action is produced by certain bacteria. Its study from this point of view was then taken up by McLean, who had observed that in horses undergoing immunization the swelling produced by an injection of diphtheria toxin subsides slowly, whereas that produced by *Cl. welchii* toxin almost instantaneously disappears. A spreading factor is in fact produced by many bacteria which cause rapidly invasive infections—notably staphylococci, streptococci, pneumococci, and *Cl. welchii*—and it seems reasonable to conclude that invasiveness and the action of the spreading factor are connected. Substances with a similar action exist in some snake venoms, and can also be extracted from malignant tumours. Until quite recently their nature and mode of action were unknown, but these have been elucidated with surprising completeness by the observations and deductions of E. Chain and E. S. Duthie.[1] These were made possible by the identification some years before by Meyer and others of hyaluronic acid as the substance to which vitreous humour and synovial fluid owe their

[1] *Brit. J. exp. Path.*, 1940, **21**, 324.

viscosity. Chain and Duthie showed that testicular and bacterial extracts which had the spreading effect also reduced the viscosity of a hyaluronic acid solution to that of water, the degree of both activities corresponding; by also demonstrating that a substance having the properties of hyaluronic acid exists in skin they linked the two phenomena, and made it appear certain that the increased tissue permeability which underlies the spreading effect is due to the breakdown of hyaluronic acid in the tissues. The enzyme responsible for this action they have named hyaluronidase, and it remains to be determined whether there is only one such substance, regardless of its origin, or whether the enzymes formed by bacteria and those found in testicle or snake venom differ in any of their properties. That there may be such differences appears likely from the recent work of K. Meyer and others,[2] who had previously[3] noted discrepancies between hyaluronidase content and capacity for causing spreading. They now report that there is a difference in optimum *p*H for activity between extracts of testis and bacteria, and find also that extracts of many strains of haemolytic streptococci, though of high spreading activity, have little or no power to break down hyaluronic acid. Studies on these lines have brought to light an extraordinary feature in the behaviour of haemolytic streptococci. It is well known that in the first few hours of growth in a fresh medium these organisms sometimes form capsules which later disappear. This capsule is composed of a substance indistinguishable from hyaluronic acid, and it now appears that by subsequent production of hyaluronidase the organism brings about the dissolution of its own capsule. This phenomenon has recently been studied by D. McLean,[4] who confirms the fact that in streptococci of Groups A and C capsule formation and hyaluronidase production are mutually exclusive. Pneumococci also produce hyaluronidase, but their capsules are not composed of hyaluronic acid and therefore persist, although pneumococcus hyaluronidase will destroy streptococcus capsule. McLean found also that the addition of hyaluronic acid to a culture medium for streptococci led not to increased capsulation but to greatly increased hyaluronidase production. It is quite possible that this process has an equivalent in tissues subject to rapid streptococcal invasion. It is at least probable in a broader sense that this enzyme plays an important part in acute inflammation, and its study should amplify our understanding of that process.

PECTIN AS A BLOOD SUBSTITUTE

The successful use of blood derivatives in the treatment of shock has demonstrated the necessity in such cases for replenishing the volume of circulating fluid with a fluid which has identical or similar physical characteristics. Blood derivatives are inevitably limited in amount and expensive to prepare. A substitute is highly desirable. Gum acacia was used for this purpose in the last war; it has the disadvantage that it is toxic and difficult to prepare. Recently Taylor and Waters[5] have proposed the use of isinglass or fish gelatin, and preliminary experiments have given satisfactory results. Pectin solution is now proposed by Drs. Hartman, Schelling, Harkins, and Brush[6] as a possible alternative. Pectin may be described as a colloidal carbohydrate of a high molecular weight and rather complex composition. It is prepared from plant cells, where it is probably combined with cellulose. For the purpose of the present investigation solutions were made from a commercial dry powder, great care being taken in sterilization and buffering of the final product. One-half per cent. of the pure pectin solution has about the same viscosity and osmotic pressure as whole blood. As with other colloidal solutions, every lot does not turn out alike, and every batch of pectin solution has to be tested against citrated blood and suspensions of red blood cells, including examination for haemolysis, rapid sedimentation, and preparation of film.

Experimental observations show that pectin is retained in the body for a short period, and is then eliminated rapidly in the urine. There is no obvious cumulative effect. Liver function as measured by the fractional bromsulphalein test and fibrinogen shows slight depression only with massive doses. Preliminary experiments on dogs and rabbits proved that pectin solutions were non-toxic and non-antigenic. The low blood-pressure level in dogs after haemorrhage was rectified by injections of pectin. Similar satisfactory results followed the treatment of dogs with experimental bile peritonitis. The observations made on human operative cases are, however, not convincing. Only four cases are quoted, and in only one of these was the blood pressure low before the pectin solution was given. Far more controlled proof of the clinical value of pectin solutions is needed before it is considered in any way as an alternative to blood derivatives in the treatment of shock.

[2] *J. exp. Med.*, 1941, **73**, 309.
[3] Ibid., 1941, **73**, 109.
[4] *J. Path. Bact.*, 1941, **53**, 13.
[5] See *British Medical Journal*, 1941, **2**, 166.
[6] *Ann. Surg.*, 1941, **114**, 212.

X RAYS IN TREATMENT OF INFLAMMATIONS

A timely review by Pendergrass and Hodes[1] of the *x*-ray treatment of inflammation opens with the statement that its value has been well recognized by radiologists from the beginning of the century, but that the majority of other physicians remain to be convinced of its benefits. This scepticism, they think, is in some measure due to a lack of well-controlled experimental evidence, and they accordingly devote part of their paper to a summary of recent work in this field. Although a bactericidal effect can be demonstrated with large amounts of radiation, it is agreed that the small doses in therapeutic use are unlikely to have a direct influence on bacterial morphology or physiology. A uniform and characteristic response to such small doses, however, is dilatation of the blood and lymph capillary vessels, so that the passive hyperaemia of an inflamed volume of tissue is transformed into a region of active hyperaemia, with speedier resolution as the result. The radiosensitivity of leucocytes is also such that even a small dose of radiation destroys a sufficient number to "decompress" the inflamed focus, and it can do this at an earlier stage in the process than can surgical incision and drainage, which usually awaits the localization of the infection in a definite abscess. These two effects are probably enough to account for the benefit given by radiotherapy in inflammatory conditions, though there may also be enhancement of the normal immunological responses and the setting free of protective antibodies.

A more important cause of scepticism is the natural suspicion with which a therapeutic agent is viewed when it is reported efficacious in a wide variety of conditions. But the two effects referred to above are a reasonable explanation not only of how radiations work but also of why they are of value in so many different diseases, for the basis of inflammation is the same, whether the disease is called parotitis, actinomycosis, whitlow, carbuncle, and so on. Pendergrass and Hodes report their results in many such conditions, and call a case successful only if it is

[1] *Amer. J. Roentgen.*, 1941, **45**, 74.

relieved in a considerably shorter time than is usual when radiotherapy is not employed. On this basis the proportion of successful results in bursitis is 52%, in carbuncles 45%, in cellulitis 78%, in erysipelas 83%, in furuncles 72%, in acute post-operative parotitis 52%, and in warts 98%. These modest claims should inspire confidence, and when in addition their paper is supported by a bibliography of nearly 200 references, by no means confined to radiological literature, it is rather surprising that the scepticism referred to should persist. The treatment of septic fingers in the out-patient departments of our hospitals is seldom such as to merit congratulation, and any registrar or house-surgeon who is in the habit of referring such cases to the *x*-ray therapy department can testify not only to the shortening of the period of incapacity but also to the restoration of useful function in fingers which would otherwise have been amputated. At a time when every man-hour is of such importance, the attachment of radiotherapists to industrial centres where much time is lost through septic fingers and other minor inflammatory conditions would be of great value. The technique of radiotherapy in these conditions is simple, and the doses required are so small—Pendergrass and Hodes usually give 100 to 200 *r* daily for three to five days—that there is no risk of radiation injuries; thus with the present shortage of radiotherapists the hospital or armament works casualty officer could be taught the essentials in a few weeks. The radiotherapist interested in the treatment of inflammatory conditions has gained from experience the indications for varying the time intervals between successive doses and the size of such doses, but there is no reason to suppose that the casualty officer would be any less apt.

SCHISTOSOME DERMATITIS

Since Cort[1] described the occurrence of an acute dermatitis from penetration of the skin by the cercariae of a schistosome the subject has been intensively studied in America. The condition is common on the bathing beaches of Northern Michigan, Wisconsin, and Manitoba, but it also happens in Europe, and its occurrence in at least one place in the British Isles—Cardiff—has been reported by Matheson.[2] Cort described his own symptoms as a prickling sensation about ten minutes after immersion of his hand in water infested with the cercariae, followed quickly by urticarial blotches which subsided in about half an hour, leaving minute macules. In less than twenty-four hours intense itching developed, papules began to appear, and in two days the hand was swollen and painful and the papules became pustular. The condition began to subside in five days. Horny skin was not affected; the cercariae seemed to make their entry by the hair follicles. The disease naturally acquired by bathers follows a similar course, though pustular complications do not seem to be common unless the water is otherwise polluted; but sometimes the lesions have taken as long as three weeks to subside. Outside the experimental field, those who suffer have almost always been bathing or wading, so that the disease is popularly known as bather's or swimmer's or water itch. The cercaria first identified by Cort as causing the condition was *C. elvae* Miller. That occurring in Cardiff was *C. ocellata*, which appears to be the common schistosome in European outbreaks. Subsequent work in America has established that dermatitis may be caused by at least three others—namely, *C. douthitti*, *C. physellae*, and *C. stagnicolae*—and Cort suspects that most of the twenty-odd cercariae of schistosomes which do not set up the systemic disease, schistosomiasis, may in man nevertheless be capable of causing dermatitis. The immediate hosts are water-snails: either Lymnaeidae, of which the species *Stagnicola emarginata angulata* (Sowerby) is the commonest in Michigan, while several others figure in Wisconsin; or Physidae, which, as Brackett[3] has shown, also harbour cercariae in the latter State. The carrier snail at Cardiff was *Lymnaea stagnalis*. A particular species of cercaria is not entirely specific to any one variety of snail. Much less is known about the adult schistosomes and their hosts, but it is generally believed that they occur in water birds; it is suggested, for instance, that *C. physellae* may be the larval stage of *Pseudobilharziella querquedulae* of the blue-winged teal. One cercaria, *C. douthitti*, is known to be derived from a schistosome infesting mice, musk-rats, guinea-pigs, and rabbits, and certain experiments with it are interesting. It has been assumed that the violent cutaneous reaction of human beings to invasion by cercariae is a measure of their inability to penetrate beyond the skin. Brackett[4] experimentally infected a young rhesus monkey with *C. douthitti* by almost daily immersions over a week, and found at necropsy four weeks after the first infection not the slightest trace of dissemination. In experiments on himself with *C. stagnicolae* and *C. elvae*[5] he found no trace of the parasites in sectioned skin at twenty-nine and fifty hours after infection, but there was ample evidence of burrows, some of them blind, extending no further than the Malpighian layer. He concluded that these experiments confirmed the observed epidemiological fact that no case of systemic infection had ever been noted in the areas where bather's dermatitis is present. The possibility that one or other of these cercariae might assume the faculty of invading the human body, like *S. haematobium* or *mansoni* or *japonicum*, would indeed be alarming in view of their prevalence. A recent communication by Penner[6] is therefore likely to lead to further examination of the subject. He immersed a healthy young rhesus monkey for an hour in water containing *C. douthitti*, estimated to number 28,000. At necropsy five and a half days later there was evidence of extensive but mild dermatitis. Migrating worms were plentiful in the lungs and slight haemorrhage was noted. He suggests that the same process might occur in man, and especially in young children, and that the migrant cercariae, even if they went no further, might carry other infections mechanically from the outside to the lungs and intervening tissues. Full details of his work are not yet available. It is possible that this unexpected finding was due to some exceptional feature of the experiment, out of the range of the circumstances associated with natural infection.

[1] *J. Amer. med. Ass.*, 1928, **90**, 1027.
[2] *Trans. roy. Soc. trop. Med. Hyg.*, 1930, **23**, 421.
[3] *Amer. J. Hyg.*, 1940, **32** (Sec. D), 85.
[4] Ibid., 1940, **31** (Sec. D), 49.
[5] *Arch. Derm. Syph.*, 1940, **42**, 410.
[6] *Science*, 1941, **93**, 327.

PICROTOXIN IN ANOTHER ASPECT

German textbooks on pharmacology of thirty years ago had much to say on convulsive poisons such as picrotoxin. To a young English student at the time they seemed only to be stressing their lack of relation to useful therapeutics. Recently, however, convulsive poisons have found a use, and all who have tried it realize that picrotoxin is a certain weapon in the fight against an overdose of narcotic. Barbiturate coma, no matter how deep, can be dispelled by hourly intravenous injections of 10 mg. of picrotoxin, and it is likely that other forms of narcosis are equally tractable. This dose repeated in a normal person would be apt to

produce convulsions, but after an overdosage of barbiturate it exerts an effect which is entirely beneficial. Unfortunately picrotoxin is no proprietary drug! it has no manufacturer's advertising power behind it, and so its value is still too little known.

The antagonism between picrotoxin and barbiturates can easily be demonstrated in animals.[1] If a group of mice are injected with a dose of nembutal which will kill 80% of them their lives can be saved if they are also injected with a dose of picrotoxin which by itself would kill 80% of them. Recently a paper by F. E. Rosenthal[2] has appeared which reminds us of another aspect of the physiological action of picrotoxin. Injected into normal rabbits it causes a fall of body temperature; this observation was made by Harnack so long ago as 1894. If the injection is given subcutaneously the dose must be very large (1.2 mg. per kg.); if, however, the injection is made vertically downwards through the brain to the neighbourhood of the hypothalamus, as a "para-infundibular" injection, then so small a dose as 1 microgramme of picrotoxin in 0.05 c.cm. of distilled water will cause a fall of 4.1° C. in four and a half hours. Now barbiturates given in large dose subcutaneously will also cause a fall in temperature; thus phenobarbitone (luminal) in a dose of 0.05 gramme per kg. caused a fall of 5° C. in a rabbit in five hours. This is, of course, a very large dose, corresponding to 45 grains for a man of 60 kg. If picrotoxin and phenobarbitone are given simultaneously the effect of the one is neutralized by the other and the body temperature remains normal. The same phenomenon is seen with picrotoxin and paraldehyde. As the cooling effect of picrotoxin is accompanied by bradycardia, and as it is a stimulant substance, its action is believed by Rosenthal to be due to stimulation of a cooling centre in the diencephalon closely related to the centres controlling the parasympathetic system. When phenobarbitone is given simultaneously the absence of temperature fall is thought to be due to narcosis of this cooling centre, and not to be related to the fact that phenobarbitone itself causes a fall of temperature. For other substances which can cause a fall of temperature act additively with picrotoxin. Thus calcium chloride, administered by a para-infundibular injection, and aconitine both act additively with picrotoxin in causing a fall of temperature.

Interesting observations can be made by injecting small doses of potent substances into the hypothalamic region. It is, however, unlikely that a precise analysis of their effects will be possible until new technical methods of studying the activity of the brain are developed.

[1] *J. Pharmacol. exp. Therap.*, 1939, **67**, 153.
[2] Ibid., 1941, **71**, 305.

PLAGUE IN SOUTHERN INDIA

Not so long ago, perhaps as a result of memories of the Middle Ages and of the Great Plague of London, it was commonly believed that plague was an urban disease which tended to spread from one city to another along the trade routes. This view accorded well with the discovery that fleas of the black rat and to a less extent of the grey rat transmitted the disease to man. More recent observations, however, have shown that plague is often a rural infection carried on either as an enzootic or epizootic of wild animals whose association with man is as sporadic as it is accidental. Sylvatic plague is already well known in Manchuria, California, and South Africa, but hitherto its presence in India has been undetected. George and Timothy,[3] however, have now brought forward evidence which strongly suggests that sylvatic plague occurs in the Nilgiris in Southern India. The Nilgiris form a plateau in Madras Province roughly 1,000 square miles in extent, with an average altitude of 6,500 feet, though some of the peaks rise to over 8,000 feet. The climate is equable and temperate, the warmest months being only about 9° F. hotter than the coolest. Plague first attacked the district in 1903 and has been present ever since, a rough periodicity of three to four years being evident in maximum incidences. Previous observations by George and Webster[4] have shown that sylvatic plague does not occur in the plains in Southern India, but in the hills the common occurrence of sporadic outbreaks of human and rodent plague, apart from the lines of communication, and the not infrequent appearance of pneumonic cases are features which are not unusual in those countries where the sylvatic type is known to exist. A preliminary survey of the rodent and flea population of the Nilgiris showed the presence, in addition to the black rat *Rattus rattus*, of a number of common animals, including what the authors refer to as a bandicoot, the mole rat *Gunomys kok*, the field mouse *Leggada booduga*, the bush rat *Golunda ellioti*, the "musk rat" *Pachyura caerulea* (really a shrew), and the house mouse *Mus musculus*. The flea fauna comprised *Xenopsylla cheopis*, *X. astia*, *X. brasiliensis*, *Ceratophyllus nilgiriensis*, *Stivalius* sp., *Leptopsylla musculi*, *Ctenocephalus* sp., and *Pulex irritans*: of these fleas *X. brasiliensis* was found naturally infected on a black rat, while experimental evidence shows that *Stivalius*, of which three subspecies are present in the area, and *Ceratophyllus nilgiriensis* are able to transmit plague from one mouse to another. The three *Xenopsylla* fleas are excellent vectors, while *Leptopsylla musculi* has been found by Chinese workers to transmit infection: as it bites man only with reluctance, however, it is probably not of great importance. Since the three species of *Xenopsylla* and also *C. nilgiriensis* were all found on mole rats, which have no close association with man, it is obvious that conditions for the existence of sylvatic plague are almost ideal. Actual proof of the presence of this form of plague must, however, await the discovery of infected fleas or infected rodents living entirely apart from man and his haunts.

[3] *Indian med. Gaz.*, 1941, **76**, 142.
[4] *Indian J. med. Res.*, 1934, **22**, 77.

At a recent meeting of the Council of the Royal Society of Medicine Sir Henry Dale, M.D., P.R.S., was presented with the Gold Medal of the Society, which is awarded triennially for valuable contributions to the science and art of medicine.

Surgeon Rear-Admiral G. Gordon-Taylor has arrived in Boston to attend the Clinical Congress of the American College of Surgeons as a representative of the Royal Navy and the Royal College of Surgeons of England.

The *Canadian Medical Association Journal* announces that the C.M.A. has set up a committee on industrial medicine under the chairmanship of Dr. J. G. Cunningham of Toronto. The purposes of the committee are to survey the situation and define the scope and objectives of industrial medicine; to consider the qualifications and training of physicians and nurses for service in this special branch; and to take stock of the personnel and training situation in Canada to-day, with a view to fuller prosecution of the war.

"PERFECT SIGHT WITHOUT GLASSES"

BY

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This attractive slogan, or some modification of it, makes its appearance every few years, and lately it has bobbed up again, this time in the programme of the B.B.C. Brains Trust. The public are recommended to read two books on the subject in which it is stated that perfect sight can be achieved by exercises (and one of the two insists on a diet as well) and without the aid of glasses. It can be said at once that neither of these books is to be taken seriously, and there is very little truth or sense in either. The purpose of this article is not to expose the tricks of ophthalmic quacks, but to state what can and what cannot be done by eye exercises.

What Exercises Cannot Do

No exercise has been devised which can make a large eye smaller or a small eye larger, or which can change the shape or refractive index of the eye in any permanent way. In other words, and it cannot be stated too clearly, exercises are not a substitute for glasses in long sight, short sight, or astigmatism. This is as much as to say that *no* exercise will replace glasses which are genuinely needed; but unfortunately there are many of us wearing glasses unnecessarily, for they are prescribed by practitioners having no medical knowledge. It is not surprising that exercises cure some people of wearing glasses which should not have been prescribed at all.

What Exercises Can Do: A. Convergence Insufficiency

To look at any near object requires an effort of convergence, and the nearer the object the greater the effort. In people who spend the day on such work it may be that the necessary effort cannot be sustained and one eye will then diverge. Binocular vision is thus broken, and diplopia results, which is interpreted by the individual as "blurring of the print." It is sometimes for this reason that one stops reading and covers the eyes for a few minutes, after which the rested internal recti can once more produce the necessary effort.

Now that the majority of the population are engaged on near work of some kind, cases of convergence insufficiency are not uncommon, and for these patients a course of suitable eye exercises is beneficial, and if the general health is sound a cure is likely to result. A holiday may also have the same effect.

To complain that the print is blurred is, in some quarters, as much as to ask for a pair of glasses. And another member will then have joined the host of wearers of unnecessary spectacles. Such a person will be a godsend to the curer of bad sight without glasses. A competent oculist would not have given him glasses in the first place, but would have put him on exercises from the start.

B. Heterophoria

A person with two good eyes working in complete harmony is said to have full binocular vision. The image he sees with the right eye is a little different from the image seen with the left, but these two images are fused into one complete picture, which thus has depth as well as height and breadth. This is stereoscopic vision.

On the other hand there is the person who has a squint. The images he sees are so dissimilar that no effort can fuse them into one stereoscopic whole, and he therefore uses one or other eye and suppresses the unwanted image—monocular vision.

In between these two types is the patient who has a heterophoria or latent squint. Here the desire for binocular vision keeps the eyes working together, provided that the general health is good and the eyes not tired. But when fatigued the eye muscles cannot summon up the effort required to sustain binocular vision, which therefore breaks down, and the eyes assume a position of rest, one eye squinting up, down, in, or out. His "hold" on binocular vision is not good and breaks down under a strain, and he momentarily becomes monocular.

The immediate effect of becoming monocular is to throw out one's judgment of distance, for the amount of convergence required to see an object is a valuable guide to its distance from the observer. This is well demonstrated by covering one eye and trying to pour water at arm's length into a wineglass. If one eye is permanently lost other means of judging distance are called into play—for instance, the amount of accommodation required and the relative size of the object—and eventually such a person will readjust his values and once more become a good judge of distance. It is only when fatigue deprives one of binocular vision, on which one has always largely depended for judgment of distance, that any difficulty arises.

All this was perhaps of academic interest before flying became general, but it was then realized that some pilots, when learning to fly, were quite unable to land an aircraft with safety, and this although their visual acuity was up to standard; they could never tell whether they were going to land six feet up or hit the earth with a smack. The toll of aircraft so damaged became high and interest was aroused, and it was found that the majority of these young men had heterophoria.

Exercises will make many of these men first-class pilots, and to talk to them after such treatment is to be convinced. As one young man said who had been turned down for bad landing, "Now I can do a real 'daisy-cutter' every time." The development of this side of ophthalmology carries with it the names of Group Captain Livingston and Group Captain Clements, who were the pioneers of this work in the Royal Air Force, and whose study of heterophoria as it concerns flying is well known. While others are in a better position to make this statement than I, I believe that a man who has lost one eye while still young, and has had time to readjust himself, will make a perfectly safe civil pilot if the other eye is sound, but because of his restricted visual field is obviously unsafe as a Service pilot.

DIET IN PREGNANCY

BLAIR-BELL MEMORIAL LECTURE

The fourth William Blair-Bell Memorial Lecture was delivered at the Royal College of Obstetricians and Gynaecologists by Mr. W. C. W. NIXON on October 25. His subject was diet in pregnancy.

He discussed the effect of diet on health. In East Africa an interesting investigation was undertaken on two tribes, the Masai and Kikuyu, who have different dietetic habits. There were more bronchitis, tropical ulcer, and malaria among the Kikuyu, who largely ate cereals, than among the Masai, who lived on meat, milk, and raw blood. In Vienna during the last war there was starvation, and the death rate from tuberculosis was doubled in the period 1915-19. But in the province of Salzburg, where milk, butter, meat, and vegetables were still obtainable, there was little change. Again, in Germany the mortality from puerperal fever was almost doubled in twelve months as the result of the blockade. In this country it had been shown that boys from the elementary schools had poorer physique than those from the preparatory and public schools. Infectious diseases were much more serious among the children of the poor, and the incidence of dental caries was higher in the lower-income group of the population.

Deficiencies revealed by Pregnancy

He showed how the strain of pregnancy would reveal a borderline state of nutrition. Pregnancy was a "diet efficiency" test. Particularly did this apply to vitamin B_1. In Hong Kong he had seen Chinese women who early in pregnancy appeared quite normal, but later showed incipient beriberi with each additional month of pregnancy, eventually being brought into hospital *in extremis*. In some cases beriberi did not become obvious until a few days after delivery. It was the strain of labour that precipitated the condition of acute avitaminosis. Other deficiencies would reveal themselves in a pregnant woman more often than in her non-pregnant sister. This was well exemplified in Vienna in the last war, when night-blindness (due to vitamin A deficiency) developed first among the expectant mothers. Osteomalacia (Maxwell's disease) or adult

rickets resulted from the excessive drain upon the maternal calcium. It was probable that women in this country suffered from minor degrees of this disease in the form of pelvic outlet contraction. Increased demand for calcium by the mother was apparent from the dental caries which resulted from decalcification of the dentine and enamel. The foetal needs were greatest in the last trimester of pregnancy, and it was then that most of the tragic complications arose.

In 1938 McCance analysed the food eaten by 116 pregnant women of different economic levels. He found that the composition of the diet varied according to personal taste and income. The calorific value was 2,100 to 2,700 a day. Women in the poorer classes were shorter than the well-to-do. The haemoglobin level rose with income. Likewise, with a higher weekly wage there was an increased consumption of eggs, green vegetables, raw fruit, milk, brown bread, meat, and fish. In America and Holland there have been similar surveys with the special object of detecting vitamin B_1 deficiency. An investigation had been undertaken in London by the People's League of Health to consider the nutrition of expectant and nursing mothers in relation to maternal mortality and morbidity. Five thousand expectant mothers were investigated. One-half of them were given special tablets of vitamins and mineral salts. The report, shortly to be published, would be most illuminating.

The Technical Commission of the League of Nations had evaluated the physiological bases of nutrition. Nutrition experts (Mellanby, McCance, Orr) were agreed on the importance of milk and dairy produce, eggs, vegetables, fruit, and cod-liver oil during pregnancy.

There were several pregnancy states attributable to malnutrition. Wernicke's encephalopathy was a terminal phase of hyperemesis. Polyneuritis was not commonly seen in this country. In Hong Kong it was naturally more often met with owing to the marked deficiency of vitamin B_1 in the diet of the poor. In 1937 a series of 27 cases had been collected in the University clinic there. Vomiting was common to all patients in the early months of pregnancy. In habitual abortion doubt had been cast on the importance of vitamin E. Nutritional anaemia was all too common among the women attending ante-natal clinics in this country. Anaemia did have some slight influence on puerperal pyrexia. In a recent epidemic of puerperal sepsis, on analysis of the ante-natal notes, two cases had haemoglobin levels of 45% and 50% respectively two weeks before delivery. More haemoglobin estimations in ante-natal clinics would detect anaemia, and much ill-health in mother and child would be prevented. Osteomalacia had been put on the "nutritional map" by the classical researches of Preston Maxwell in Peking. It was one of the best examples of how pregnancy would reveal a malnutritional state. In puerperal sepsis Sir Edward Mellanby had shown there was a nutritional factor. He had reduced puerperal morbidity by giving pregnant women vitamin A.

Oedema, Toxaemia, and Avitaminosis B_1

The triad—oedema, toxaemia, and avitaminosis B_1—had impressed itself on Mr. Nixon at an early stage of his career in Hong Kong. In 1936 he found that 10% of those delivered had had oedema in pregnancy at some time or other, lasting for more than seven days. Avitaminosis B_1 was a causative factor in many of them. Many pregnant women in this country noticed at different times swelling of the hands in the absence of toxaemia, anaemia, protein lack, and excessive salt intake. In collaboration with Dr. Margaret Wright of the research laboratories of Vitamins Ltd. fourteen of these oedematous cases had been examined. It was felt that some might be due to lack of vitamin B_1 in the diet, just as in the Hong Kong patients. Hyperemesis, hypertension, pre-eclampsia, and, of course, controls were also investigated from the vitamin B_1 aspect. Prof. Gordon King was now in charge of the Hong Kong University obstetric clinic. In the preface to his 1939 report he drew attention to the association of oedema, toxaemia, and avitaminosis B_1. His 1940 report had just arrived here. In studying this an interesting fact emerged. There had been an alarming increase in the number of eclampsia and beriberi cases. The severer the degree of eclampsia the higher the incidence of avitaminosis B_1, with concomitant increased mortality. An analysis of the eclampsia table was significant. There were 42 cases, and 19 (45%) of these were complicated by avitaminosis B_1. Of the 13 fatal cases 11 also had this complication. Thus in 85% of eclampsia deaths there was the double lesion, eclampsia and avitaminosis B_1.

Dr. Margaret Wright and Mr. Nixon had collected 8 cases of eclampsia from different hospitals in this country, and had investigated their vitamin B_1 excretion. A statistical examination of the figures showed that in these the excretion of vitamin B_1 was significantly below that of the normal control pregnant women. Thus they had now proved that there was a positive correlation between eclampsia and a severely diminished vitamin B_1 excretion. The vitamin B_1 content of the placentae of the eclamptic patients was also significantly low compared with the normal. The placentae of 24 normal women had been examined, the average content of vitamin B_1 being 19 units per 100 grammes (average weight of placenta, 520 grammes). The placenta was a storehouse for vitamins. In the future it might be found that biochemical examination of the placenta would provide an indication of the state of nutrition of the mother and her offspring.

The assessment of nutrition was possible by simple clinical methods. A biochemical laboratory was not always to hand. A diet and economic questionary was of great assistance. The lower the income and the larger the family the less the food the mother would herself be taking. Stature was an indication of the dietary capacity of the community, provided hereditary factors were eliminated. Texture of hair, the nails, colour of mucous membranes, condition of skin, presence of petechiae, the teeth, gums, atrophy of the tongue papillae, sores at the angles of the mouth—all these could be rapidly observed. Follicular hyperkeratosis (vitamin A deficiency) was a special and early sign of improper feeding. In 1940 Pemberton estimated that of 3,000 children investigated in this country it was present in 5%. It was commonly seen in China, and responded with improvement of the diet and halibut-liver oil. Workers in Peking had noticed these skin changes due to vitamin A deficiency in the absence of ocular manifestations such as night-blindness and xerophthalmia. It was possible that in the coming winter we might find this evidence of vitamin A deficiency more widespread unless cod-liver oil were more universally administered in ante-natal clinics. Haemoglobin estimation would detect nutritional anaemia, and it should be done at the first visit to the clinic and be repeated at the thirty-sixth week.

Review of the Present Position

The rest of the lecture was devoted to a review of the present position. Mr. Nixon said:

Are pregnant women suffering from lack of essential foodstuffs? Will those of us who survive the next twenty years be able to point then to the adolescent with one or more nutritional stigmata and say he or she was a war baby? The survey of Sir John Orr before the war revealed the amount of malnutrition in this country. In present circumstances it hardly seems possible that there has been an amelioration of that nutritional state. Tuberculosis, a barometer of a community's nutrition, is on the increase. Many pregnant women are working long hours in factories where meals in canteens are far from ideal. At the end of the day how can they be expected to cook a health-giving meal? By interrogation of ante-natal mothers I find that the class of woman who is having difficulty in obtaining the proper kind of food is, regrettably, the soldier's wife with two or three children. The price of certain essential commodities, especially vegetables for making salads, is quite beyond her reach. Meat, eggs, milk, fruit, and cheese are restricted. Herrings, which should be eaten much more, are at times difficult to obtain. National wheatmeal bread is unobtainable in some districts.

If some of the expectant mothers are not getting the proper food should we resort to synthetic substances? It has been computed that in the U.S.A. 90 million dollars a year is spent on vitamin pills. Is it to be pills or food? The Nazis learnt from an experiment in the Swiss Army. Soldiers were fed artificially, and among other things were given vitamin B, vitamin C, iron, yeast, and gelatinous sugar. The results were poor. The German soldier gets his vitamins from butter, rye bread, yeast extract, soya bean, vegetables, and milk.

The produce from the land, if properly prepared and cooked, is more assimilable than the capsules from the laboratory. There is a psychological side to nutrition, as Pavlov has shown with his dogs. Let us hope we shall never live in a "brave new world" of Aldous Huxley with tabloid meals. We must make our obeisance to the biochemists and their epic researches, yet remind them of Ruskin. "What," he cried in a burst of righteous wrath, "what are *we* good for but to damage the spire, break down half the houses, and burn the library—and declare there is no God but chemistry."

Granted that malnutrition and poverty are twin sisters, entirely economic and therefore preventable, yet no one can gainsay the fact that vitamins are being thrown down the sink. The ignorance of many of our women in cooking food is appalling, and the apathy and obstinacy of their menfolk towards the subject almost universal. Dame Louise McIlroy's has been a voice crying in the wilderness: so often has she declared that the problem of maternal mortality and morbidity may be solved in the kitchen rather than in the laboratory. In war the fighting Forces require first consideration, yet it must never be forgotten that the pregnant and nursing mother is the next most important member of the community. Germany lost the last war on the home front—the kitchen front. Those of us who see to the welfare of expectant mothers have a heavy responsibility these days. Not only their fate but also that of the future generation is in our hands. We, as doctors, must interest ourselves more in the question, "Do they know how to buy, what to buy, and what to do with the food when they have bought it?" The worst type of obscurantism regarding diet is sometimes to be found among doctors and nurses. What exactly is the connotation of bland fluids, a light diet?

Three Lines of Attack

The problem of nutrition needs to be attacked on a broad front, and we in the medical profession have a big contribution to make; but we are lagging. In the belief that the health of the community in general and pregnant women in particular would be improved, I submit the following suggestions for your consideration:

1. *Maternity and Child Welfare Clinics.*—The supervision of diet should be one of the primary functions of all those working in maternity and child welfare clinics. These clinics are attended by a great number of women, who could be instructed in the art of buying and cooking food. The sum-total of hours spent and wasted by these women in waiting-rooms must amount to an astronomical figure. To lessen this monotony and at the same time benefit the health of the expectant mother I suggest that there should be in every waiting-room: (*a*) A milk bar attractively arranged, where a pint or more of milk should be given free. For those who do not like milk (and there are quite a number) varieties of "milk shakes" should be available. (*b*) A counter with salads, national wheatmeal bread, etc., daintily prepared—in fact, an Oslo meal. These should be distributed free or at minimum cost. (*c*) A demonstrator who would discuss with the women what best to buy at current prices with their limited means. She should demonstrate fully the preparation of dishes and talk over culinary problems in a simple, sympathetic, and practical way. She should act as an adviser, not teacher of the academic kind. If possible, communal feeding at the clinic would be ideal. Women of the poorer classes, particularly those of younger years, are only too willing to be educated in health matters when these are explained simply, and the benefits that accrue to them and their babies are emphasized by a doctor or nurse. It is for this reason I propose that the "food advice bureau" should be linked with the ante-natal and post-natal clinics. Thus by precept and example could the elementary principles of proper feeding be inculcated and the methods so demonstrated practised in the home. In this way would the mothers of our country be guided so that they would themselves be contributing to one of the greatest measures in public health—proper nutrition. A start in this direction has been made at the Soho Hospital for Women. Through the good offices of Dr. B. S. Platt of the staff of the Medical Research Council I now have at my out-patient clinic an L.C.C. demonstrator who imparts to the waiting patients simple methods of preparing food for optimum health. The hospital provides all the materials necessary.

2. *Provision of Instruction for Doctors and Nurses in Dietetic Measures.*—There is an unfortunate and disappointing lag on the part of doctors and nurses in putting into practice the newer knowledge of nutrition. An awakening of a food conscience is necessary. Their opportunities for spreading the food gospel are unique, and yet many lay people are in advance of them in this respect. In their hospital instruction more *practical* dietetics should be included. For those who have graduated, short courses could now be arranged and practical hints published in the medical press. As nearly 60% of the women of England and Wales are confined by midwives it follows that these nurses are in a particularly good position to give dietetic instruction to their patients. The Central Midwives Board could assist in this direction.

3. *The Improvement of Diet in Hospitals and Institutions.*—Hospitals are lamentably behind in the provision of proper diet. Good food is ruined in the kitchen. The matron and the probationer, the steward and the wardmaid, the medical officers—all must develop an awareness of the transcendant importance of the kitchen front and take practical steps to ensure proper feeding not only of their patients but also of themselves. A proper perspective of preventive medicine—social medicine in contradistinction to curative—needs to be inculcated. Good health and good feeding cannot be divorced, and the marriage between midwifery and housewifery is long overdue.

CO-ORDINATION OF HOSPITAL ADMINISTRATORS

While public authorities and the governing bodies of voluntary hospitals are in conference on matters of hospital policy, plans have also been laid for the setting up of a single professional association of lay hospital administrators to give a lead both nationally and in the regions on all matters touching the recruitment and training of hospital administrators, their work and responsibilities, and to make recommendations to regional and national hospital councils on administration and management.

The Incorporated Association of Hospital Officers, founded in 1902, has hitherto restricted its membership to the administrative staffs of voluntary hospitals. The Incorporated Association of Clerks and Stewards of Mental Hospitals, founded in 1904, is representative of lay administrative officers of mental hospitals. These are the only two organizations restricting their membership and professional qualifications to lay hospital administrators, and their councils have decided to recommend to the members the adoption of an agreement for fusion under which at the same time provision will be made for the admission of stewards and other administrative officers of hospitals managed by public health committees of local authorities, Departments of State, such as the Department of Health for Scotland, and other analogous bodies. It is proposed that, for the time being, the educational work of the two bodies should continue on the present lines, but that a special committee should be set up at an early date to consider the problem of recruitment and training of hospital administrative staff in all its aspects. The committee will have in mind the recommendations in the Sankey and Hadow reports, as well as the results of the work of such bodies as the American College of Hospital Administrators.

Co-ordination of hospital services on a regional basis cutting across the old divisions between public and voluntary institutions will call for a certain uniformity in methods of business administration and a common system of accounts. It is hoped that the reconstituted association embracing lay administrators of all types of hospital will do valuable work in solving problems which will arise in the development of a satisfactory administrative system for all hospitals. As the principles and practice of management develop towards uniformity in all types of hospital there can no longer be room for entirely independent qualifications for lay administrators in the different sections of the hospital service. The united association will work out a system of recruitment and training which, while common to all, will allow for some degree of specialization by means of alternative examination papers.

POLISH MEDICAL FACULTY AT EDINBURGH

ADDRESS BY THE DEAN, PROF. JURASZ

The recent foundation of the Polish Medical Faculty within the University of Edinburgh was the subject of an address given by the Dean of the Faculty, Prof. A. T. Jurasz, at a meeting of the History of Medicine Section of the Royal Society of Medicine on November 5. Dr. J. F. Halls Dally, president of the Section, was in the chair.

Prof. Jurasz, who spoke excellent English, began by describing the Hitlerian war on Polish culture. From the University of Cracow 180 professors and others were sent to a concentration camp in November, 1939. A like fate befell representatives of the University of Poznan, and later of Lwow and Warsaw. Some eminent men of science had been sentenced to death; libraries had been closed and the contents confiscated; others had been reopened to serve the cause of the Germanization of Poland. Everything of special value had been taken from the museums and other collections and sent to Germany. Cathedrals and churches had been robbed of their treasures. Even German professors of distinction who had formerly been guests at scientific congresses in Poland had taken an active part in this plunder. This systematic and premeditated looting after hostilities had ceased had brought to the Polish nation a loss not smaller than that represented by the aerial and artillery bombardment of Warsaw. Buildings connected with education had been requisitioned. The Ministry of Public Instruction was occupied by the Gestapo, Warsaw University housed the security police, and secondary schools were taken over by the army.

A Scottish Welcome

In July, 1940, Prof. Jurasz continued, the remnant of the Polish Army, which included many doctors, was brought to the British Isles. In view of the presence of many Poles in Scotland Colonel Irvine Fortescue, D.D.M.S., Scottish Command, sought to organize a means of occupying and refreshing the minds of the medical men among them. He consulted Prof. F. A. E. Crew, who was commanding a military hospital with the rank of Lieut.-Colonel, and he arranged for batches of twenty Polish medical officers at a time to be attached to that hospital for periods of a fortnight. Further arrangements were made with the Medical Faculty of Edinburgh University and with the managing board of the Royal Infirmary whereby Polish medical officers might be spread among different departments and clinics. Linguistic difficulties, however, prevented these well-intentioned schemes from fully serving their purpose.

Finding that among the Polish medical officers in Scotland were many who had held academic positions in the Polish universities and that among the troops there were many students of medicine whose studies had been interrupted by the war, Colonel Crew made the further suggestion that these professors be given facilities at Edinburgh to teach their own people in their own language, and that the undergraduates should be allowed to complete their curriculum and proceed to graduation. These suggestions were gratefully accepted by the Director of the Medical Services of the Polish Forces in Scotland and by the Polish military authorities in London, who agreed to permit medical officers of academic standing to work in Edinburgh, and students to go up for refresher courses of from three to six months, and thereafter graduate, and return to the Army as reinforcements for the medical services.

The consent of General Sikorski, commander-in-chief of the Polish Army, was obtained, and the idea was embraced with enthusiasm by M. Cot, Minister of the Interior, who saw in it a closer cultural link between the Polish and British peoples.

The Beginnings of the Faculty

In October of last year, Prof. Jurasz said, he was instructed to go to Edinburgh and make contact with the University authorities. Prof. Sydney Smith placed before the Medical Faculty the proposal that a Polish Medical School be formed, and this received unanimous approval. In the Senate the proposal had the powerful support of Sir Thomas Holland, the Principal, and was approved. The heads of the departments of the Medical Faculty placed their resources at the services of their Polish colleagues, and the Board of Management of the Royal Infirmary agreed to open their lecture theatres and wards to Polish professors, lecturers, and students, and more recently accommodation in municipal hospitals had also been placed at their disposal. The secretary of the University and the legal adviser to the Polish Government worked out the constitution of the new School, and drew up an agreement which was signed on February 24. The head of the School was the Dean. The teaching staff comprised six professors, seven lecturers, and ten other specialists. Edinburgh professors represented in the Faculty subjects for which no Polish lecturers were available. The curriculum and standards of teaching and examination were the same as those required in the Medical Faculties of Polish Universities. The programme of teaching was somewhat different from the British, but was according to Polish law. The examinations were practical, theoretical, and oral, and the chairman of the Examinations Board was the Dean. The Faculty comprised the Dean and seven Polish and nine British members, the latter being professors of Edinburgh University.

The inauguration took place in March last in the presence of the President of the Republic (M. Raczkiewicz). To those who participated, said Prof. Jurasz, it was one of their proudest moments since leaving Poland. They felt that a great responsibility had been entrusted to them, that they had the confidence of the authorities of the University of Edinburgh and held in their keeping the faith of Polish youth.

A Polish Hospital

A Polish hospital, named after Paderewski, had been organized in the grounds of the Western General Hospital. It had been equipped with generous help from America and was intended for the treatment of Polish civil as well as military cases. It was staffed by members of the Polish Medical Faculty and contained 80 beds and an out-patient department. Surgical beds in the Western General Hospital had been placed at the disposal of the Poles, as well as the use of operating theatre and *x*-ray department.

The School began with 77 students, 47 of whom were serving in the Forces. Some 30 had finished their studies in Poland but had not passed their examinations, and a refresher course was arranged for them. Prof. Sydney Smith and Prof. T. J. Mackie had kindly undertaken the examination of the students in forensic medicine and bacteriology respectively. For the second academic year, which had just started, there were 120 students, of whom five were Czechs. The first student to receive his diploma, M.B., B.Ch., at the hands of the Dean of the Faculty was Lieut.-Pilot K. Bazarnik of the Polish Air Force, who returned immediately to his fighter squadron.

Prof. Jurasz concluded by affirming the determination to maintain the high standard of Polish learning and by paying a tribute to their Scottish colleagues, from whom they had received every possible support and facility. The Polish Medical Faculty was an effective post in the front line of the fight against a destructive barbarism which had sought to impose its own perverted culture upon Europe. It was also a reaffirmation of the international ideal of learning and science.

The lecture was followed by a reception at the Polish Embassy in Portland Place. Among the British guests welcomed there by the Ambassador were Sir Henry Dale, President of the Royal Society; Sir Charles Wilson, President of the Royal College of Physicians of London; Sir Alfred Webb-Johnson, President of the Royal College of Surgeons of England; Sir Edward Mellanby, Secretary of the Medical Research Council; Mr. E. Rock Carling, Senior Surgeon, Westminster Hospital; Dr. H. E. A. Boldero, Dean of the Middlesex Hospital Medical School; and Capt. G. S. Elliston, M.P.

J. Bonaba, J. R. Marcos, and M. de Agorio (*Arch. de Pediat. del Uruguay*, 1941, **12**, 317) record four cases of encephalitis complicating pneumonia in children aged from 3 to 13 years. The encephalitis was indicated in the first case by aphasia, in the second by convulsions and coma, in the third by an oculo-extrapyramidal syndrome, and in the fourth by an ataxo-cerebellar syndrome. All made a complete and permanent recovery.

MALARIA ILLUSTRATED BY CINEMATOGRAPH FILM

The value of the cinematograph film as a means of conveying instruction in hygiene and health precaution was never better shown than in a sound film entitled "Malaria" which has been produced for world-wide distribution by the Shell Film Unit in collaboration with the Ross Institute of Tropical Medicine. With this film, which takes about half an hour to pass through the projector, the scientific critic can find no fault (except, perhaps, that the title refers to "microphotography" when "photomicrography" is meant—rather an important distinction now that microphotography has suddenly come into such wide use), and the lay spectator gains a great deal of information which is essential and even life-saving if his travels should take him to the malaria regions. Some of the photography was done at Horton Hospital, Epsom, in the malaria unit there, and some, particularly that dealing with methods of control, has been done in tropical lands. The first part of the film, which includes an interesting flash of Sir Ronald Ross at work with his microscope, illustrates, mostly by clever cartoon, the life cycle of the parasite. The way in which the malaria germ attacks and destroys the red blood corpuscles is vividly shown. The second part concerns the carrier, and compresses into a few minutes the two or three weeks which elapse between the laying of the egg, through the larval and chrysalid stages, and the emergence of the adult mosquito. Nothing could be better than the "shots" illustrating the mosquito actually laying its eggs or its method of taking its blood meal.

Control of Mosquitoes

The third part of the film deals with mosquito control. The importance of such control is suggested by rapid pictures of great engineering works, such as Singapore docks, which have been made possible only by the most resolute measures to suppress the mosquito. But the point is brought home that malaria control can only be successful, whatever method is employed, if the co-operation of every member of the community in the malarial region is enlisted. The most important methods of stopping the larvae are shown to be by draining the land where mosquitoes breed, by spraying the surface of the water with oil, or blowing on to it a poisonous dust such as Paris green. To destroy or keep away the adult insect, spraying, mosquito-proofing, and the use of mosquito nets are advocated, and all these are shown in action. Control in the long run resolves itself into careful choice of healthy sites for houses in mosquito-ridden countries, taking suitable measures against breeding grounds, and personal protection against the adult insect. The technique of the film and the imagination shown in the choice and use of material deserve high praise. It is being issued for instructional purposes to H.M. Forces.

Local News

IRELAND

Health of Eire

The public health of Eire as reflected in the statistics for infectious diseases for the year 1939-40 continues to improve, the total of 6,146 notifications—roughly 1,900 fewer than in the previous year—being the lowest recorded since 1930. The incidence of diphtheria, which in 1938-9 (2,983 cases) was disappointingly high, was lower in 1939-40 than it had been for some years, the figure being 2.097. This is attributed in the Health Department's report to the immunization campaign which is being actively pursued, but regret is expressed "that the unfortunate dispute with the medical profession regarding fees for immunization . . . is still unsettled and consequently many children are still unprotected." The report records, however, that many practitioners "to their credit are carrying out the work without fee or reward." There were increases in the incidence of both typhoid and influenzal pneumonia, that of typhoid being attributed to a serious outbreak in County Kerry in the summer months. Mortality from the principal infectious diseases declined notably during the year; the aggregate figure of 385 deaths was the lowest yet recorded; in 1936 these deaths numbered 687. Although the total number of tuberculosis patients treated in 1939 was 18,321, or 443 more than in 1938, the number of cases under observation showed a decline of 1,057. Deaths from all forms of tuberculosis numbered 3,304, a rate of 1.13 per 1,000, as against a decennial average of 1.23. Both maternal and infant mortality compared favourably with the figures for the preceding year and those for the decennial period 1929-38.

SCOTLAND

New Blood Transfusion Plant for Scotland

The Government have agreed to make a grant to Scottish Blood Transfusion Services towards the establishment of two centres in Scotland for the processing of plasma taken from blood supplied by voluntary blood donors for use in hospitals. To each centre will be attached a whole-time mobile blood-withdrawal team, so that the services of country donors will be more readily utilizable than has hitherto been the case. One centre is to be under the direction of Prof. James P. Todd; the other, directed by Dr. C. P. Stewart, is also to be equipped with up-to-date plant for the preparation of dried plasma. While scientists in Scotland have done much useful work in the study of blood transfusion, they have not hitherto had the opportunity of developing the drying of plasma, the only drying plants in existence being attached to centres in England. The plant will be utilized not only in the preparation of plasma but also in experimental work. As dried plasma is believed to have better keeping qualities than liquid plasma, especially under difficult temperature conditions, it will now be possible to keep much larger stores of plasma available for Scottish civilian hospitals and for the Forces without risk of wastage, and adequate supplies will be ready for immediate use in bombarded areas. The services of Scottish blood donors were placed at the full disposal of the Forces at the outbreak of war, and it is hoped that by the establishment of these new centres the help given in this direction may be greatly increased. The address of the Scottish National Blood Transfusion Association is 10, Duke Street, Edinburgh, 1.

Cleanliness of Glasgow School Children

The first year of war, which saw the evacuation of school children from the large cities, the return of many of them, the closing of schools and dislocation of education, and the slow re-establishment of a modified regime, must stand by itself so far as statistics of medical inspection of school children are concerned; it can offer no useful comparison with previous years. The report, just issued, of the education health service in Glasgow during the year ended July, 1940, does, however, suggest that the improvement in the physical condition of school children which has been built up in recent years has been maintained. Measurements were taken between September, 1940, and April, 1941, of between 6,000 and 7,000 boys and a similar number of girls at 5 and at 13 years of age, and on comparing the measurements with those for 1939 a distinct improvement is shown, though, admittedly, the figures are not a true reflection of school population. The main attention of the school medical staff in Glasgow has been devoted to scabies, which has been increasingly prevalent; to pediculosis capitis, which was the most frequent cause of complaint against evacuated children; and to enuresis, which was greatly on the increase in 1940. It is admitted that as regards nits and vermin of the head the children evacuated from Glasgow were not as free as they should have been. The trouble is that so little can be done with the child whose head is not kept clean. A child may be cleansed, but hair cannot be cut without the parents' permission, and cleansing without cutting takes time. It is suggested that an attempt might be made to impose as a condition of attendance at school shorter hair styles for children; also that powers should be extended to allow examination of the person and clothing of the school child in the home. Enuresis was also the subject of widespread complaint from the reception areas at the first evacuation. Subsequently the presence of this defect was admitted in about 3% of the children examined. The school service has obtained good results by a combination of parental co-operation and gradually increasing doses of tincture of belladonna.

Correspondence

Radiographs and Pelvic Disproportion

SIR,—The leading article on "Radiology to the Help of Obstetrics" (p. 551) and the article by Mr. J. V. O'Sullivan on "radiographs and disproportion" (p. 543) in your issue of October 18 raise the very interesting question—the place that should be assigned to radiography as a guide to treatment in cases of pelvic disproportion. In their enthusiasm for this wonderful aid to diagnosis a number of obstetricians would have us believe that all is now simplified, and that from films of maternal pelvis and foetal head plotted out with exactness, as can now be done, the treatment is obvious. Such obstetricians are a menace to expectant mothers. There is a large number of cases in which from radiographs, no matter how perfect, you cannot tell whether the head will or will not pass, just as there are the other two groups: (*a*) cases in which the head can certainly pass (normal pelvis); (*b*) cases in which the head can certainly not pass (markedly abnormal pelvis).

Unfortunately there are three conditions which cannot be determined by *x* rays or any other means beforehand; and they are the most important factors of labour in minor pelvic disproportion: (1) the adjustment of head to pelvis which occurs as the lower segment develops and under strain of "labour pains"; (2) the give of the pelvis, which increases very markedly in the "premonitory" stage of labour; (3) the strength of the uterine contractions. Referring to "trial labour," here is what Chassar Moir wrote recently (*Edinb. med. J.*, 1941, **48**, 361): "I do not intend to enter into a discussion of this topic: it is, however, not unfair to say that extensive use of trial labour amounts to an admission of inability to foretell the probable course of events in individual cases. There is little doubt that the main cause of this uncertainty lies in the difficulty in obtaining accurate measurements, and, secondly, of understanding the significance of the observed variations of pelvic size and structure." DeLee states in the 1940 *Year Book of Obstetrics and Gynecology*: "Since the *x* ray cannot measure the strength of the pains, or the moldability of the head, or the expansibility of the pelvis joints, or the nutation of the sacrum, or the rigidity of the soft parts, or the nervous mechanism of labour, or the metabolism of a parturient, etc.—you can see what a small role it plays in the routine conduct of a delivery; but I would not do without it" (p. 38). "The *x*-ray—even in stereo form—is not a perfect guide for the conduct of labour; we must watch it, but we can learn many things, and I would not do without it" (p. 42).

The procedure should be: (1) pelvic mensuration; (2) radiography of pelvis; (3) estimate of relative size of head and pelvis by hands. By these means cases can be segregated into: (*a*) those in which spontaneous delivery (with possibly assistance with forceps at outlet) is certain because of the good formation of pelvis; (*b*) those in which Caesarean section is necessary because of pronounced deformity; (*c*) those on borderline in which there is uncertainty, and consequently the "trial of labour" is necessary—there is a large number of such cases.

In these borderline cases the trial of labour is necessary to complete the diagnosis as to whether the head will or will not pass—in other words, whether the labour should be allowed to proceed or Caesarean section should be employed. Here, as Thoms and O'Sullivan claim, a *lateral radiograph* is helpful. By observing large numbers of cases the obstetrician gains such knowledge that comparatively early in labour he can make a fairly correct surmise as to whether or not the head will pass. In a few cases, however, he may have to let the labour proceed into the "second stage," but a prolonged second stage should not be permitted, because of the danger to the child.

Cases of breech presentation at full term where the pelvis shows by *x* rays a minor degree of disproportion should be treated by Caesarean section; it is inadvisable to perform prophylactic version in order to test the relative size of head and pelvis.—I am, etc.,

Canterbury, Nov. 1. J. M. MUNRO KERR.

Increase of Tuberculosis

SIR,—Prof. Lyle Cummins (November 1, p. 632) has suggested that the rise in incidence and death rate from tuberculosis observed in this country since 1939 is to be explained entirely by the discharge from sanatoria of "a great many tuberculous persons" at the outbreak of the war. I am not aware of the actual number so discharged, but it can hardly have been more than one-half of the total number undergoing institutional treatment for tuberculosis. The total number of tuberculosis beds in England and Wales at the end of 1937 was approximately 33,000.

The number of new cases of tuberculosis notified annually in England and Wales is in the region of 60,000 (tuberculosis of respiratory organs about 45,000). On the usually accepted view that the average duration of the disease is about five years, we must conclude that the total number of notified cases "at large" in England and Wales at the outbreak of the war was not much smaller than 300,000, and this takes no account of the unknown number of undiagnosed and therefore unnotified cases.

It is not easy to believe that the dispersal of about 16,000 cases among a population which already harboured more than 300,000 cases would so increase the amount of tuberculous infection in the community as to account for the rise in incidence and mortality observed during the present war. The theory becomes still less acceptable when we remember that the number of sources of infection outside institutional control in normal times is so great that practically every member of the community has been infected with tuberculosis by the time middle life has been reached. This continues to be so, notwithstanding the steady decline in tuberculosis mortality in this country during the present century, a decline interrupted only by the two great European wars. Little is gained by attempts to simplify what is in fact a complex problem, but if we are to concentrate our attention on a single one of the many factors involved let it be something more practicable and promising than suggestions for the incarceration of every possible source of infection.

During the war of 1914-18 there was a striking increase in tuberculosis mortality in all European countries engaged in the war or affected by its blockade, and study of this phenomenon has produced ample evidence of the importance of the nutritional factor. The case of Denmark provides the most convincing evidence. In Denmark tuberculosis mortality rose steadily during 1915 and 1916, but fell sharply in 1917 and continued to decline afterwards. Faber has shown how closely these changes coincided with the deterioration in the Danish food situation up to 1916 and improvement from 1917 onwards. In Britain tuberculosis mortality fell sharply in 1918. The highest mortality rise occurred in Germany, and though this began to fall from 1919 to 1921 it rose again from 1921 to 1923 during the period of economic distress and inflation. These are only a few of the facts which emphasize the importance of the nutritional factor. Other factors are certainly involved, perhaps not least increased hours of work and increased strain among the adolescent, but there is little evidence for the belief that changes in the infection factor are of great importance.

The use of such rhetorical phrases as "a bomb thrown among the public" is out of place in a scientific journal, and overemphasis of one of the minor aspects of the problem can only result in distracting attention from vitally important aspects.—I am, etc.,

London, E.1, Nov. 1. A. L. JACOBS, M.R.C.P.

SIR,—Dr. A. H. Bartley (October 25, p. 594) calls attention to the danger arising from tuberculous individuals with T.B.+ sputum, and asks for more rigid control. May I suggest that the best remedy would be careful education of every such patient in the precautions taught in a well-managed sanatorium? The danger from cases of open pulmonary tuberculosis is conditional, and can in most cases be prevented by such precautions.

Although not now in active practice I was concerned in the management of tuberculous cases for nearly thirty years, and found ample evidence that there is very little danger of the

spread of tuberculous illness if the usual rules are observed. Unfortunately many patients are insufficiently trained, or become careless after leaving a sanatorium, and this is a weak spot which always needs attention. Dragooning would not succeed in this country; but systematic education followed by tactful supervision is invaluable. It would occupy too much space to give the evidence for my statements, but they are supported by the records of Papworth and of some of our best sanatoria.—I am, etc.,

Farnham, Oct. 30. F. R. WALTERS.

Fats and Carbohydrate Metabolism

SIR,—Your report of Dr. R. B. Lawrence's presidential address before the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on carbohydrate and fat metabolism (October 25, p. 591) is provocative of many questions, because the great interest of the facts disclosed requires of us an attempt at interpretation.

The facts are apparently that in diabetes: (1) ketone bodies are burned (a word implying use and not storage) in the peripheral tissues; (2) ketone (ketonaemia) is harmful when it appears suddenly; (3) the precursors of the ketone bodies in the blood can, at least on occasion, be derived from depot supplies as distinct from diet; (4) the sequestration of fats in depots, as distinct, presumably, from their burning in peripheral tissues, can be increased by the deficiency of certain protein fragments in the diet (especially choline); (5) when the precursors of ketone bodies are depot supplies the metabolic pattern through which they pass may run parallel with hyperglycaemia—an event which, we have come to consider, is linked with the pattern of pituitary influence.

The first obvious question is this—If ketone bodies are burned in peripheral tissues, is this necessarily harmful to those tissues? If not, are we faced with a failure of the peripheral tissues to metabolize ketones when ketonaemia is associated with ketonuria and the toxic effects ascribed to ketosis? Are we to understand that insulin facilitates the burning of ketone bodies in the peripheral tissues and that this contributes not to their pathology but to their physiology?

The next question concerns the occasional correlation of lipaemia and hyperglycaemia. The implication here is that the lipaemia is derived from the pituitary metabolic pattern. Since this is here associated with inability to store fat subcutaneously, can this be the opposite pole of the process which produces pituitary obesity? How does this connect with the fact that in the experimental animal choline does not prevent the deposition of fat in the liver when injections of anterior pituitary extract have been given?

Is there not a contradiction in supposing, on the one hand, that hyperglycaemia facilitates lipaemia without subcutaneous deposition of fat, and, on the other, that it produces the subcutaneous deposits of diabetic obesity?

Whilst I appreciate the dangers of speculation in science, I feel that an ignorant man may at least help himself by asking obvious questions—that is, if he can get anyone to reply to him.—I am, etc.,

Coventry, Oct. 27. K. E. BARLOW, M.R.C.S., L.R.C.P.

Vitamin-E Therapy in Neuromuscular Disorders

SIR,—The leading article on vitamin-E therapy in neuromuscular disorders (November 1, p. 618) is an excellent example of careful and unbiased criticism, in which the evidence for and against the proposed method of treatment, as well as the underlying physiological and pathological phenomena, are summarized, weighed, and evaluated. The conclusion reached is one with which few would wish to quarrel, in so far as it states that you find nothing yet to persuade you that "any disturbance of . . . locomotion in man is due to deficiency of vitamin E or is alleviated by treatment with it." This conclusion is based upon, and justified by, the evidence summarized in the article, but you have, I suggest, unfortunately gone beyond your brief in extending it and writing actually as follows: "We find nothing yet to persuade us that any human disease, or any disturbance of child-bearing or locomotion in man, is due to deficiency of vitamin E or is alleviated by treatment with it." This statement can only mean that the treatment of habitual abortion with vitamin E also has no evidence to support it.

One welcomes all indications that the organ of scepticism is actively secreting, but one cannot be quite so pleased at signs of marked hypertrophy, accompanied, as so often, by an inability to distinguish simple conclusions even in the light of logic. Some two years ago you published a paper by myself (*British Medical Journal*, 1941, **1**, 890) in which the records of cases of habitual abortion treated with wheat-germ oil or concentrates were summarized and compared with Malpas's figures, analysed by him to establish the chances of full-term pregnancy for untreated women who have aborted two, three, four, or more times (*J. Obstet. Gynaec. Brit. Emp.*, 1938, **45**, 932). There can be no doubt about the figures. Malpas's analysis of 2,000 untreated cases shows that the expected number of full-term deliveries from forty-two women who have aborted four times or more is three; that number of treated abortants showed thirty-three successful full-term deliveries. The odds against this being due to chance were found to be about 1,046 to 1. One would have thought that such astronomical odds might have carried some kind of conviction even to the hypertrophic sceptic.

Apart from the forty-two cases mentioned above, there were fifty others that had had between two and four consecutive spontaneous abortions; here again the differences between the number of pregnancies experienced and the number expected in the absence of treatment were highly significant. From these figures there is to be drawn an obvious conclusion, which should surely be accepted provisionally, if only on the principle of Occam's razor. This conclusion is that the treatment was responsible for the differences between actual live birth rate and the rates expected on the basis of Malpas's analysis. The only other conceivable explanation is that Vogt-Möller's two series of cases, investigated in Copenhagen some years apart, and the cases treated by Watson and Tew several thousands of miles away in Canada, were all alike influenced in a favourable direction by some unknown and unsuspected cause rather than by the vitamin-E therapy to which these patients had been submitted, the only known common respect in which they differed from Malpas's untreated cases. This, surely, would be too much of a coincidence even for a critic of normal scepticism.

I submit, therefore, that the adventitious and irrelevant introduction of your leader writer's reference to child-bearing has no justification.—I am, etc.,

A. L. BACHARACH.

Glaxo Laboratories, Ltd., Greenford, Middlesex, Nov. 6.

Treatment of Hallux Valgus in Soldiers

SIR,—May I crave space to make some comments on Lieut.-Colonel R. Brooke's article on the treatment of hallux valgus deformity in soldiers (November 1, p. 605). It contains important points which may be summarized as follows: (1) The patients are young males with only slight deformity. (They would not be in the Army if it were severe.) (2) Palliative treatment should be the method of choice. (3) If operation be necessary minimal procedures are best.

There are, however, certain other aspects which need to be considered, for on them depends the success or failure of treatment. Hallux valgus *per se* is merely part of a deformity-complex or general derangement of the fore-foot, and is the direct result of the pull of the adductor and other muscles on the great toe owing to spreading or fanning of the metatarsals. This spreading can be seen in all *x*-ray photographs, though it may not be marked in the slight cases, and involves only the first metatarsal. The metatarsal exostosis is due to intermittent pressure of the boot. I have yet to see a "bunion" not associated with alterations of the first metatarsal axis.

The metatarsal spreading is due comparatively infrequently to "toxic" causes such as rheumatoid and gonococcal arthritis. The much more common cause is hypermobility, instability, or incompetence of the first metatarsal. There is no space to enter fully into this matter. Sufficient to say that it is discussed in the publications of D. J. Morton, Lambrinudi, Girdlestone, and myself. I am at present preparing a cine film co-ordinating and amplifying the various observations.

Consequently the ideal treatment must include some correction of the position of the first metatarsal, and Lieut.-Colonel Brooke's suggestion of fixing the extensor hallucis longus to the inner side is of value. Undoubtedly the majority of the younger males require nothing further than excision of the metatarsal exostosis, and very many females even with an apparently bad metatarsal spread are perfectly satisfied without an arthroplasty of the metatarsophalangeal joint. I cannot agree that all arthroplasties end with flail toes, nor that it is impossible to correct the valgus deformity by this means. I have serial *x*-ray photographs showing that after removal of the proximal half of the proximal phalanx the actual correction of the position of the great toe equals the theoretical one. It is, of course, essential that any arthroplasty should not consist of removal of the head of the first metatarsal, because its removal destroys the supporting effect and merely exaggerates the incompetence of the bone. After an efficient arthroplasty there is a flail toe for some weeks, but if the operation be performed correctly voluntary control returns and is quite effective.

There will always be stiffness if the following points are ignored. It is essential to remove half the proximal phalanx, and in the younger members of the community (approximately those under 35) where new bone formation is fairly profuse the interposition of fascia by one of several methods is essential. In the older patients this fascial interposition is not required.

Finally, there is no essential difference between the civilian and the soldier. It is incorrect to say that good functional recovery is impossible in the case of the soldier. There is a much too common belief that in the majority of cases recovery is complete in a few weeks. Anybody who has followed up the series of these cases knows that recovery is by no means complete until the expiration of six months; that the period in which the patient returns to work, whether civil or military, depends on the type of work, and is shorter for the lighter forms of work and longer for the heavier. The rate of recovery and the degree of recovery depend far more on the care and skill of the operator and on the after-treatment than on the type of operation performed. It is common for the after-treatment to consist of early movements, but in view of the fact that in an arthroplasty we desire to obtain movement, that movement is restricted by the formation of excessive scar tissue, and that minimum scar tissue demands complete fixation in the early stages, I have always maintained that the correct after-treatment for at least three weeks is complete fixation in plaster-of-Paris. The best position to immobilize the toe is in about 20 degrees of dorsiflexion, because when we walk, and particularly when wearing boots, there is always a certain amount of dorsiflexion owing to the height of the heel. When the plaster is removed physiotherapy is of great value. Another reason for applying plaster-of-Paris is so that the metatarsal arch can be remoulded and held corrected through the early convalescent period.

I feel confident that attention to these points will alter Lieut.-Colonel Brooke's opinions on the results of operative treatment in soldiers as well as in civilians.—I am, etc.,

Manchester, Nov. 4. W. SAYLE CREER.

SIR,—The article by Lieut.-Colonel R. Brooke deals with a problem of special importance at the present time. All are agreed that this condition, so amenable to treatment in peacetime, presents many difficulties now. The association of flat-foot with hallux valgus is almost a constant one, and it may be that treatment is not being sufficiently comprehensive to deal with this. A course of flat-foot exercises, as indicated by Lieut.-Colonel Brooke, should form the basis of treatment, and the exercises themselves ought to become almost instinctive.

Many people go through life with quite symptomless flat-foot and hallux valgus. The increased strain of Army life and the wearing of Army boots by such individuals will often precipitate bunion formation and consequent breakdown in the foot mechanics. The boot, therefore, is not to be regarded as blameless. The soldier cannot discard his footwear, but much may be done to adapt it to the new conditions. The hard leather which overlies the bunion can be softened and stretched, or an inlet of soft leather substituted, so as to relieve pressure over the tender area. At the same time an ordinary football bar, placed behind the tread, will do much to relieve the strain on an irritable first metatarsophalangeal joint.

Where conservative measures fail radical operation is preferable to a soft-tissue reconstruction. Hallux valgus has an insidious onset, and many years may elapse before the patient is seen. This means that the cartilage on the head of the first metatarsal, where the original normal articulation took place, has degenerated. At operation it is seen to be thinned, eroded, or, in the later cases, to be frankly arthritic with osteophyte formation. Except in the earliest cases, therefore, any operation which replaces the first phalanx on this abnormal cartilage must be disposed to ultimate failure. Removal of the proximal half of the proximal phalanx, with excision of the exostosis on the metatarsal head (Keller's operation), will give the most satisfactory end-results. At least half of the phalanx should be cleanly excised, and the tendon of the extensor hallucis longus tenotomized well away from the wound to avoid adherence in the scar. The wearing of a pad of cotton-wool between the great and second toes should be insisted upon for at least six weeks.

Lieut.-Colonel Brooke's assertion that after this type of operation the valgus deformity persists is not borne out by my own experience, nor does the toe become a useless appendage. The return of function, indeed, is often remarkable. If care be the keynote of treatment in this complex condition there seems no adequate reason why the majority of patients should not return to their former duty.—I am, etc.,

Southport, Nov. 5. R. S. GARDEN, F.R.C.S.Ed.

Diagnosis of Early Venereal Disease

SIR,—May I be allowed to endorse the importance of Dr. Noel F. Rowstron's letter (November 1, p. 632).

I agree that sulphonamides should never be administered to the patient who is about to visit a V.D. specialist for diagnosis. The diagnosis of venereal diseases must always be supported by pathological tests. The venereologist finds the gonococcus evasive enough without having it first of all doped by sulphonamides. Dr. Rowstron's remarks on the early diagnosis of genital sores are also very true.

The triad of the "venereologist's nightmare" is, in my opinion: (1) the "clinical" gonorrhoea, treated with sulphonamides; (2) the "cured" case, who has received no tests of cure; (3) the undiagnosed genital sore, previously treated with antiseptics.—I am, etc.,

C. HAMILTON WILKIE, M.D.,
Nov. 3. Director of V.D. Services, Leicester.

Future of Mental Health

SIR,—Dr. Karin Stephen (October 25, p. 589) would appear to look to something called "psychotherapy" as the predestined cure for, and preventive of, all the mental and moral troubles of our present age. Formerly the great guardians of the *mens sana* were supposed to be our churches and our schools, and it is to be remembered that these institutions are still carrying on, although often—like the schools of "psychotherapy" themselves—sadly distracted by internecine feuds.

In short, no "theory" of mental and spiritual health has yet found anything like general acceptance in our distracted Western world, and under these circumstances it seems idle to discuss the setting up here and now of any official or semi-official organization to deal with the matter. Let none of our enthusiastic "post-war planners" take it upon themselves to propose the institution of a new "ministry" for which "candidates" have to be selected, examined, and "licensed" to deal with the "souls" of their fellow-countrymen. We doctors at least certainly do not yet know enough to arrogate to ourselves any such function. Let us rather go on individually studying the subject of mental stability and imbalance, and discussing our experiences in such papers as the *B.M.J.* Perhaps in the end some finally unchallengeable findings will be arrived at; then we can begin to talk of "organization," statutory or academic.

Towards this goal may I, as one who had much experience of so-called "shell shock" in the last war and regrets not being similarly employed in the present one, offer just a single contribution—a hint as to "how not to do it."

Any nervous or quasi-mental patient who is definitely curable and yet who is not getting better "of himself" needs in the

first place definitely individual treatment. This emphatically precludes the would-be psychotherapist from taking on a large number of cases simultaneously. Secondly—a perhaps even more important point—the patient must be treated in a mentally healthy *milieu*. In other words, on account of the strong effect of suggestibility, he must so far as possible live among sane people, who will be an example and encouragement to him. Such patients should obviously under no circumstances—so long as their ultimate cure is considered a possibility—be herded together among a lot of definitely insane people. Hence no institution which, for other reasons, is forced to deal with its inmates *en masse* is justified in calling itself a "mental hospital." Although many such institutions to-day include a considerable amount of hospitalization, they are primarily concerned with the care and maintenance of the incurably insane. Therefore the name "hospitals" should not be applied to them; it also gives the public a false idea of their essential function, which in the long run will be found bad policy.

There is much wisdom in what Dr. Karin Stephen says, particularly in her reservations. Yes indeed: *Quis custodiet ipsos custodes?* Who is to train the trainers of the trainees?—I am, etc.,

Durness, Sutherland, Oct. 30. A. J. BROCK.

Loss of Vision following Haemorrhage

SIR,—The article by Dr. H. L. Tidy (May 24, p. 774) is full of interest. Quite a number of years ago I saw a few cases sometimes with loss of vision in one or both eyes. It followed haematemesis, haemoptysis, or post-partum haemorrhage, but never a traumatic haemorrhage. In the last war, now sometimes called the "first German war," I never heard of a case in Egypt during four years. The cases I saw in civil life never recovered. Elaborate investigation failed to throw any light on the cause. In the anaemias I have seen disturbance of the optic disk but never the total loss of vision which follows the haemorrhages referred to. So far as I am aware it remains an unsolved problem. Fortunately it is very rare.—I am, etc.,

Melbourne, Sept. 9. JAMES W. BARRETT.

Nasal Snuffs

SIR,—With reference to the article on antiseptic snuffs by Dr. M. E. Delafield, Dr. Edith Straker, and Prof. W. W. C. Topley (February 1, p. 145), although confirmation of the results of using antiseptic snuffs for nasal infection does not seem available in South African research institutions at present, there can be little question of the benefit obtained by the local application of sulphanilamide derivatives to certain infective conditions of the nose in Natal, provided the drug is used as a dry powder in small enough doses to produce a comfortably clear condition without destroying nasopharyngeal protection. This suggests that inhalation of the dry powder would be effective in cases of pneumonia and save the large quantities at present prescribed orally for these patients. Moderation would be essential to avoid irritation of the bronchial tubes, though the immediate destruction of the infective organisms *in situ* might well be expected to give relief by carefully regulated application of the powder to all portions of the respiratory organs, including the nasal cavity.—I am, etc.,

Durban, S.A., Sept. 25. F. GORDON CAWSTON, M.D.Cantab.

Industrial Medical Boards for Women

SIR,—Thousands of young women are joining munition factories, leaving their jobs and taking up work of national importance; thousands more are wanted, but the response to appeals and entreaties is not satisfactory. I suggest that one of the causes of the present reluctance to join is the fact that no attempt whatever is being made to grade the girls as to their physical suitability for the work they are taking up. As there is no medical examination we may find girls suffering from tuberculosis working and freely mixing in canteens and hostels with others; verminous girls infecting their more fastidious sisters; girls unfit for heavy work put to manipulate heavy machines. I have had some experience in examining and grading girls in the distributive industry, where the work is not too strenuous, and even then my colleagues and I have found a number of girls unsuitable, on medical grounds, for the work. It is obvious there must be many more in heavy industry.

I would plead for the immediate institution of nation-wide medical boards, similar to the medical boards in the Army, to examine and grade women for work in industry. A lot of wasted effort in training girls who could be classified as unsuitable on medical grounds alone would be avoided, more suitable labour could be chosen, and absenteeism materially reduced. The expense of these examinations would be well repaid by the weeding out of infectious and unfit people, who could and should be referred to their doctors, medical officers of health, or hospitals. We would thus do a great work of preventive and curative medicine and use a unique opportunity to improve the health of the future mothers of the nation.

Needless to say that medical supervision should be continued in factory and workshop the adjustments be made, as the strain of industry will make itself felt.—I am, etc.,

London, W.1, Nov. 3. E. M. HERBERT.

A Municipal Hospital

SIR,—In view of the numerous statements concerning municipal hospitals which have recently been made and reiterated in the correspondence columns of the *Journal*, we consider it desirable that the following facts regarding the particular hospital which we serve should be put on record.

1. The medical superintendent does not seek to exercise his authority over the clinical work of the staff but rather to encourage their independence and initiative.

2. The senior clinical staff are men of high qualifications and attainments, and continuity of tenure is assured to them.

3. The members of the senior clinical staff devote the whole of their time and energies to the care of their patients in the hospital, and they are constantly available to guide and instruct the junior staff in the performance of the duties entrusted to them.

4. By liberal grants of study leave the Middlesex County Council encourages the clinical staff to visit medical and surgical centres at home and abroad. Until the outbreak of war full advantage was taken of these opportunities.

5. A medical society, which includes all the staff of the six general hospitals controlled by the Council, provides in its clinical meetings, held in each hospital in turn, a fruitful field for discussion and mutual criticism.

If these admirable conditions can be created in one group of hospitals under a county council they can be achieved by all. Where they exist "atmosphere" can be left to look after itself.—We are, etc.,

L. I. M. CASTLEDEN. J. L. HAMILTON-PATERSON.
D. B. CRAIG. G. H. JENNINGS.
J. N. DEACON. R. M. MILLEN.
F. FORTY. E. ap I. ROSSER.

Redhill County Hospital, Edgware, Middlesex, Nov. 3.

Students and the Curriculum

SIR,—Mr. J. L. Taylor's letter (November 1, p. 629) would doubtless interest all those who are interested in the student's point of view. May I, through the courtesy of your columns, show that we Scottish students have not been idle in putting forward our views?

In each of the four universities discussions are to be held on the topic of medical education. It is probable that these will be along the same general lines as Mr. Taylor indicated. Each medical school will draw up its own report based on these discussions and on the discussions of the Medical Faculty Committee, and it will then be forwarded to the Scottish National Union of Students' Medical Bureau, which will draw up the final draft of the report.

There are many problems peculiar to the Scottish schools, and we hope that our efforts will enable us to ferret them out and draw them up in concise and presentable manner. We are only too well aware of the responsibilities which complete reservation from National Service places upon us, and are no less eager than our English fellow-students to play our part in the crises of to-day and the castles of to-morrow. This year has seen much closer co-operation between the respective

English and Scottish students to the benefit of both. I have every confidence that this is only the beginning of a long period of close and beneficial relations.—I am, etc.,

ROY MCL. ARCHIBALD,
Glasgow, Nov. 2. Interim Convener, S.N.U.S. Medical Bureau.

Air-raid Shock

SIR,—We have had "railway spine," "traumatic neurasthenia," "nervous shock," "shell shock," and "bomb shock," and now Dr. W. E. R. Mons (November 1, p. 625) gives us "air-raid shock." May I protest against this latest addition to a mischievous and medically meaningless series?—I am, etc.,

WILLIAM A. BREND.
Neurological Clinic, Ministry of Pensions, Nov. 3.

Obituary

W. A. WETHERLEY-MEIN, F.R.C.P.Ed., F.R.C.S.Ed.

By the death on October 29 of William Archibald Wetherley-Mein at the early age of 52 Bournemouth and district has lost a skilled professional colleague and a generous and most kindly friend.

He was born in India in 1889 and educated at George Heriot's School, Edinburgh, the Edinburgh Dental Hospital, and the Royal College of Surgeons, Edinburgh, gaining the qualifications L.D.S. in 1916, L.R.C.S., L.R.C.P.Ed. 1917, F.R.C.S.Ed. 1920, M.R.C.P.Ed. 1925, and being elected in 1931 F.R.C.P.Ed. After practising dentistry for a very short time he gave this up and devoted his life to the practice of surgery, in which he was actively engaged at the time of his death. During the 1914-18 war he was surgeon lieutenant R.N. until he was invalided out of the Service. Later he became temporary lieutenant, R.A.M.C., and remained in the corps until the end of the war. Subsequently he held appointments as R.S.O. at Ancoats Hospital, Manchester, orthopaedic surgeon at the Bangour Hospital, and honorary assistant surgeon at the Portsmouth Royal Hospital.

In 1920 he came to Bournemouth, where he became honorary surgeon to the Cornelia and East Dorset Hospital, and to the Victoria Cripples' Home at Westbourne. He was also consulting surgeon to the hospitals at Milford-on-Sea, Shaftesbury, and Blandford. He was surgical specialist to the National Union of Teachers, and surgical specialist to the Ministry of Pensions for the Bournemouth, Poole, and district area. His work brought him into contact with a wide circle of friends, who will mourn his passing and will remember him for his staunch character and the loyalty and generosity of his friendship.

Wetherley-Mein was a keen yachtsman and sportsman, in which capacity were seen both his determination and strength of character, as well as his attractive sense of humour. In his busy life he still sometimes found time for sport, and it was while shooting only a few weeks ago that he was first taken seriously ill. In Freemasonry he attained the rank of P.P.G. Superintendent of Works for the Province of Dorset, and well merited the esteem in which he was held by all who knew him. He had been a member of the British Medical Association for twenty-four years, and when the Association met at Bournemouth in 1934 he served as honorary secretary of the Section of Paediatrics. He published a number of papers, principally on diathermy and electrosurgery, in which he had for long been particularly interested. At the time of his death he was engaged in writing a book on this subject. He was also president of the Poole Medical Society.

The loss of Archie Mein (as we all knew him) will for long be keenly felt by his many friends, colleagues, and patients. For his widow and his son, also in the medical profession, sincere sympathy is felt by all of them.

J. A. W.

W. DOUGLAS MACFARLANE, M.B., CH.B., F.R.C.S.ED.

We regret to note the death of Mr. W. Douglas MacFarlane of Glasgow, which occurred in Aberdeen on October 15. Mr. MacFarlane had been taken suddenly ill while engaged in examinations of nurses, and was removed to a nursing home, where he died. He had resumed his work only in the last four months, after a long illness of about fourteen months. It was characteristic of him that he went energetically into his usual professional duties, perhaps against the advice of some of his friends, who did not think that his cardiac condition would permit him to carry on his full work, but he always maintained that he would much rather die in full harness than in only a part of his ordinary professional activities.

William Douglas MacFarlane was born in Glasgow, the son of a well-known general practitioner in the East End of that city. He was educated at Glasgow High School, and graduated M.B., Ch.B. of the University in 1922. In 1926 he was admitted to the Fellowship of the Royal Faculty of Physicians and Surgeons, Glasgow, and in 1934 he became a Fellow of the Royal College of Surgeons, Edinburgh. From the beginning of his professional career he was determined to devote himself to surgery, and he joined the out-patient staff of the Western Infirmary, and later was assistant surgeon to the Victoria Infirmary. He concentrated, however, on the surgery of children, and was appointed visiting surgeon to the Royal Hospital for Sick Children, Glasgow, and clinical lecturer on surgical diseases of children. He became recognized as an authority on the surgery of children, and was a very keen operator and worker in his hospital. At medical society meetings he frequently exhibited coloured films showing operations in progress. About 1935 he was appointed consulting surgeon to the Clackmannan County Hospital, Alloa, an institution where he had considerable opportunity of doing urgent surgery, as many road and mining accidents were admitted. He was an associate member of the British Orthopaedic Association and a Fellow of the Association of Surgeons.

Mr. MacFarlane interested himself in medical journalism in Glasgow, and for a considerable number of years was secretary to the Glasgow and West of Scotland Medical Association, which controls and owns the *Glasgow Medical Journal*. The committee of that journal very gladly recognized his enthusiastic work on its behalf. Mr. MacFarlane was only 45 years of age, and was unmarried. Much sympathy is felt with the members of his family, two of whom are on hospital staffs in Glasgow, and a third is serving as a dentist in the R.A.F.

F. C. MARTLEY, M.D., F.R.C.P.I.

Those who have attended almost any Annual Representative Meeting of the British Medical Association during the last twenty years will learn with regret of the death of Dr. Francis Charles Martley, which took place on November 2 at Farnham, in Surrey, where he had been living in retirement. Inevitably, at meeting after meeting from 1921 onwards, after the Treasurer had presented his budget, Dr. Martley would make his way to the platform, and the meeting would listen to an incisive commentary on the financial policy of the Association. It was always in a vein of friendly criticism, it never aroused rancour, but it revealed a close study of Association accounts and balance sheets such as probably few members give to them, and it was appreciated by successive Treasurers. To Martley matters like sinking funds, investments, transactions at banks and stock exchanges, leases, reserve accounts, were a kind of second nature. Had he not preferred a medical career he might well have been a leader among chartered accountants.

The same financial acumen and business ability he brought, greatly to its advantage, to the affairs of the Medical Sickness Annuity and Life Assurance Society, of the board of which for many years he was chairman. The intricacies of insurance,

again, are not everybody's recreation ground, but Martley exulted in them; there was nothing too recondite for him in financial or actuarial calculations, and his day of triumph was the annual meeting of that body when he was able to announce some excellent "with-profit" bonus. One felt, listening to his speeches on those occasions, packed with big figures, how much he enjoyed it all. When this war came and the staffs of insurance offices were depleted, and especially after the offices of his insurance society were destroyed, Martley took on his shoulders still more work; work for his society was the hobby of his retirement. No financial detail ever bored him.

His expertness in accounts and financial transactions generally (on behalf of other people, be it said, for he was not the man to make anything of it for himself, content as he was with his modest director's fee) was so remarkable that many people almost forgot that he was a doctor. But in fact he was a man of considerable academic distinction. He entered Cambridge in the late 'eighties, took the B.A. with honours in the Natural Sciences Tripos in 1887, and the M.A. in 1891. After training at St. Mary's Hospital he qualified as M.R.C.S., L.R.C.P., and proceeded to the M.D.Cambridge in 1895. His early work took him to Dublin, where he was demonstrator in chemistry at the Royal College of Surgeons and anaesthetist to Dr. Steevens' Hospital, a large hospital associated with the medical school. During his work in Dublin he began to take an active part in the affairs of the British Medical Association, which he had joined in 1895. He was a member of the Annual Representative Meetings in 1905 and the two following years; he also served on the Public Health Committee at headquarters at this time, and he was honorary secretary of the Section of State Medicine in 1907 at Exeter. Meanwhile he had become a Fellow of the Royal College of Physicians of Ireland and had taken the D.P.H.

After the last war, when Martley appeared again in the central work of the Association, it was as representative for Kensington, of which Division he was honorary secretary from 1920 to 1922, chairman in 1925-6, and representative for the whole period, with the exception of two years, from 1921 to 1934. In London he returned to his old hospital, St. Mary's, and worked in the Inoculation Department, where his chief was another man of close Dublin associations, Sir Almroth Wright. One of Martley's interests was blood grouping, and he wrote several papers in the *Transactions* of the Medico-Legal Society, the *Analyst*, and other journals, on the use of blood-group reactions in forensic investigation.

The B.M.A. has lost a most able and well-liked member; he was a man of great integrity and loved his profession, to which he gave without stint of the unusual abilities with which Nature had endowed him.

Dr. STUART ALEXANDER TIDEY, who died at Winchester on October 29, was born at Reading in 1858, the son of Alfred Tidey, who was an artist. From the age of 8 or 9 onwards he lived with his parents in Jersey and subsequently in various parts of the Continent, attending schools in Corsica, Switzerland, and Biberich in Germany. On returning to England he put in for a competitive student interpretership, which he just missed, and spent the next two years studying engineering at the Crystal Palace. He then entered St. Mary's Hospital, taking the London M.B., B.S. in 1888 and the M.D. and M.R.C.P. in 1891. He had taken the L.S.A. in 1886 and the M.R.C.S. in 1887, and in 1889 secured the Swiss Federal diploma in medicine at Geneva University. Dr. Tidey held the posts of house-surgeon, assistant pathologist, and curator at St. Mary's Hospital. In 1890 he started practice in Montreux, and in 1892 moved to Florence, where he was a prominent member of the British colony. From 1901 to 1912 he again practised in Montreux, and in 1912 went to British Columbia, where he combined farming with medical work. He then joined John Antle's medical mission to loggers, and was in charge of hospitals on the coast and inland. In 1914 he joined the hospital ship *St. George*, which he helped to fit out, and in 1917 was placed on the staff of the County of Middlesex War Hospital at Napsbury, near St. Albans. In 1920 he joined the Elders and Fyffes Line as surgeon on banana and passenger boats to Central America and the West Indies, doing the voyage eight times a year until 1931, when Elders and Fyffes were shortening staff. It was characteristic of him that he was deeply disappointed at giving up the work, though at the age of 73 he might reasonably have considered that a little leisure was indicated. Every aspect of medicine and surgery interested him, and though his body was weakened by paralysis agitans his mind was active to the last. Dr. Tidey was author of articles on treatment of compression in pulmonary lesions, on the treatment of empyema and of corpulency. He was a very English man, in spite of his many foreign sojournings, quiet in speech, and retiring in manner, while setting out the gist of any subject in a few words. He was intensely interested in music and natural history, and gardened until incapacitated by gradually advancing disease.

I. P.

R. T. writes: Dr. JOHN GILFILLAN RONALD, whose death was recorded in the *Journal* of November 8, first assisted and finally succeeded his father in the practice at Larbert, which father and son between them held with distinction for over one hundred years. There is small wonder that he was constantly referred to not only locally but in Glasgow and Edinburgh as "Ronald of Larbert," a "title" based on the best foundations of all—affection and esteem. His quiet sincerity of thought and earnestness of purpose endeared him at once to all who came into contact with him. He was devoted to his profession, and concerned not at all by material gain or worldly advancement. For forty-six years he was responsible for the first-aid and ambulance instruction in a district noted for its efficiency and advancement in this work. The British Red Cross Society had in him and in Mrs. Ronald its strongest local enthusiasts. For many years he was chief of the East Stirlingshire Infectious Diseases Hospital at Camelon. Above all, Ronald was a great family doctor, a true guide, philosopher, and friend, and of the type we associate with that generation. He took upon himself the burdens of many, and no one heard him grumble or complain. To his intimate friends the burdens seemed to be weighing a little more heavily lately, but the heart was stout to the end. His illness lasted only a few hours, so that he was taken, as he would have wished, "in harness."

The following well-known medical men have died abroad: Prof. KEN KURE, who held the chair of medicine at Tokyo, aged 57; Prof. AUGUSTE DUCREY of Rome, who discovered the streptobacillus of soft chancre in 1889; Prof. LOUIS SPILLMANN, director of the dermatological clinic and for many years dean of the medical faculty at Nancy; Dr. ERNEST DE MARIGNAC, one of the founders of bacteriology in Geneva, aged 96; Prof. PAUL SCHROEDER, founder of the *Deutsche Gesellschaft für Kinderpsychiatrie und Heilpädagogik*, and formerly professor of psychiatry at Leipzig University, aged 67; Dr. PILADES O. DEZZO, professor of hygiene in Buenos Aires; Dr. ENRIQUE SUNER, president of the Spanish Red Cross and formerly professor of paediatrics at Valladolid, and founder of the National Child Welfare School in 1925; Dr. GUNN HOLMGREN, professor of oto-rhino-laryngology at the Carolinska Institute of Stockholm, co-editor of *Acta Oto-Laryngologica*, aged 65; Dr. SEVERIN ANDREAS HEYERDAHL, professor of radiology at Oslo, aged 70; Dr. H. E. MENAGE of New Orleans, head of the department of dermatology of the Tulane University of the Louisiana School of Medicine; Dr. HENRY B. CHU, medical secretary of the Chinese Medical Association; Dr. HENRY KEITH SHAW, professor of paediatrics at Albany Medical College, 1906-30, and translator of Pfaundler and Schlossmann's *Diseases of Children*, aged 67; Dr. ANGEL C. SANHUEZA, professor of children's diseases in the medical faculty of Santiago de Chile for more than thirty years; Dr. SANTIAGO SITJAR Y BAILLE, founder and director of *Habana Medica*, aged 80; Dr. CLAUDE THOMAS WOLFE, professor of ophthalmology at the Louisville University School of Medicine, aged 57; Dr. MAX ISSERLIN, professor of psychiatry at Munich; and Dr. HANS BERGER, professor of psychiatry and neurology at Jena, discoverer of the electrical waves of the human brain, aged 68.

Erratum

We very much regret that through some confusion of names an announcement appeared in the *Journal* of September 6 of the death of Dr. S. W. BECKER of the University of Chicago. We have expressed our apologies to Dr. Becker and now repeat them in public at the first opportunity.

The Services

HONORARY PHYSICIAN TO THE KING

Lieut.-Colonel (temporary Colonel) S. Smith, R.A.M.C., has been appointed Honorary Physician to the King in succession to Major-General R. C. Priest, C.B., late R.A.M.C., who has retired.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Surgeon Lieut. DERMOT HARRY TUTHILL DUGGAN, R.N.V.R. (H.M.S. *Ardent*), who was announced as "Missing" in the *Journal* of August 10, 1940 (p. 207), is now reported "Missing, Believed Killed in Action at Sea." He was the only surviving son of the late Captain G. G. Duggan, who was killed at Gallipoli in 1915, and Mrs. G. de Courcy Wheeler of Foxrock, Co. Dublin, and was educated at Trinity College, Dublin, graduating M.B., B.Ch., B.A.O. in 1935, proceeding M.D. four years later. He had been a member of the British Medical Association since 1936. On the outbreak of war he entered the R.N.V.R. as surgeon lieutenant.

ROYAL ARMY MEDICAL CORPS

Prisoner of War

War Substantive Captain Ian Rainy Ingram MacDonald.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Francis Peyton Rous, M.D., F.R.S., of the Rockefeller Institute for Medical Research, has been elected an honorary Fellow of Trinity Hall. Dr. Peyton Rous holds the honorary degree of Sc.D. of Cambridge and was Linacre lecturer at the University in 1929.

Names of candidates for the M.Chir. examination should be sent to the Registrary by December 30; the examination begins on February 17.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The annual meeting of Fellows and Members will be held at the College in Lincoln's Inn Fields on Thursday, November 20, at 2.30 p.m., when a report from the Council will be laid before the meeting.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the Royal College of Physicians of Edinburgh, held on November 4, with the President, Dr. Charles McNeil, in the chair, Dr. B. Reid (Hellingley), Dr. J. L. Cowan (Penicuik), Dr. A. J. Rhodes (Edinburgh), Dr. A. D. Stewart (Edinburgh), Dr. A. Joe (Edinburgh), and Dr. J. B. Borthwick (Edinburgh) were elected Fellows of the College.

Hill Pattison-Struthers Bursaries in Clinical Medicine were awarded to Saul Jerome Blau and Louis Kaywin, and Wood Bursaries to Norman T. Speirs and John Alexander Loraine.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At the annual meeting of the Royal Faculty of Physicians and Surgeons of Glasgow the following officers were elected for the ensuing year: *President*, Mr. Roy F. Young; *Visitor*, Mr. James H. MacDonald; *Honorary Treasurer*, Mr. William J. Richard; *Honorary Librarian*, Dr. W. R. Snodgrass; *Representative on General Medical Council*, Mr. J. Scouler Buchanan.

According to *South Africa* of October 18, only 35 Europeans died of disease in East Africa in the first eight months after Italy entered the war, and the incidence of ill-health during the East African campaign was not much higher than in corresponding age groups of the industrial population in tropical climates. No cases occurred of plague, louse-borne typhus, and sleeping sickness among the men serving under General Cunningham. Owing to the universal inoculation of the Forces only one case of typhoid fever was reported.

Medical News

Sir Farquhar Buzzard will deliver a lecture on "Hospital Regionalization" at the Weston Hotel, Bath, on Thursday, November 20, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

A Chadwick Public Lecture entitled "Advances in Dermatology during the Past Forty Years" will be given by Dr. S. Ernest Dore, at the Westminster Hospital Medical School, 17, Horseferry Road, Westminster, S.W.1, on Thursday, November 27, at 2.30 p.m.

A squadron leader of the Royal Air Force Medical Service has written to B.M.A. House about the kindly reception given to him and to other members of the medical profession serving in the Forces by the South African Medical Association in Capetown on their brief visit to that city. Every facility for recreation, amusement, and matters of professional interest was given by the secretary, Mr. C. L. Darley-Hartley; and the kindness and hospitality of the citizens of Capetown were deeply appreciated by the visitors. The writer also refers to the "splendid bureau" near the dock gates, which is organized and run by the ladies, who put medical officers of the Services in touch with members of the profession in Capetown. Other members have mentioned the warm welcome received on their arrival at South African ports, and there was a note offering hospitality in a recent number of the *South African Medical Journal*.

Under the auspices of the Board of Education a conference on Food Education was held on November 7 and 8 at Gas Industry House, Grosvenor Place, S.W. The chair was taken at the opening meeting by the President of the Board of Education, the Rt. Hon. R. A. Butler, M.P. There were four lectures on the first day: Dr. Edouard-Jean Bigwood discussed the problem of improving health by influencing diet; Dr. Margaret Wright, rationed foods as the basis of a sound diet; Dr. Barnet Stross, food and health; and Dr. May Smith, some problems in teaching a practical subject. The morning of November 8 was devoted to a series of discussions on practical problems of food education, introduced by various speakers.

With the October number Dr. J. Y. Dent has succeeded Dr. T. N. Kelynack as editor of the *British Journal of Inebriety*.

The August issue of the *American Journal of Diseases of Children* contains a sympathetic obituary notice of Sir Frederic Still.

A severe outbreak of rabies has recently occurred in the East of Germany, according to the *Schweizerische Medizinische Wochenschrift*.

Emeritus Professor Ralph Stockman, M.D., has been elected a vice-president and Prof. E. W. H. Cruickshank, M.D., and Sir J. Donald Pollock, M.D., members of the council of the Royal Society of Edinburgh.

Mr. Robert John McConnell, M.Ch., honorary surgeon to the Ulster Hospital, Belfast, has been commended for brave conduct in civil defence.

The Pavlov laboratories in Leningrad are conducting research on the effect of various pharmaceutical substitutes on the higher nervous system. The work is going on regularly and systematically despite the proximity to the front.

The Canadian Red Cross Society is equipping a 25-bed emergency hospital for the Polish Army recruiting station at Windsor, Ontario. A 45-bed hospital will also be built for the Polish training centre at Owen Sound.

A typhus epidemic is reported to be raging in the ghetto of the Polish town of Miedrzyzec.

The manufacture of all drugs not vitally necessary, and of all cosmetics without exception, has been forbidden in Germany owing to the shortage of raw materials.

Owing to the lack of offers of "Aryan" blood for transfusion, the Rumanian Red Cross has announced that Jewish blood will be accepted.

No. 43

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended October 25.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week of last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) the 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1941 (a)	(b)	(c)	(d)	(e)	1940 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	88	5	38	1	7	149	6	23	2	3
Deaths		—	3		—		1	1		—
Diphtheria	1,017	51	277	56	33	1,312	46	452	33	44
Deaths	31	3	6	2	1	38	2	8	3	2
Dysentery	139	16	95		—	88	2	71		—
Deaths			—	—	—			1	—	—
Encephalitis lethargica, acute	2	—	—	—	—	4	—	1	—	—
Deaths		1	—				1	—		
Enteric (typhoid and paratyphoid) fever						38	1	3	6	3
Deaths						2	—	1	—	—
Erysipelas		—	52	8	2		28	71	9	4
Deaths		—	—		—		1	1		—
Infective enteritis or diarrhoea under 2 years										
Deaths	56	3	16	25	4	34	—	14	3	2
Measles	745	52	23	50	3	11347	184	446	—	9
Deaths	—	—	—	1	—	12	1	3	1	—
Ophthalmia neonatorum	77	5	20		1	69	5	18		—
Deaths										
Paratyphoid	53	3	4	—						
Deaths	—	—		—						
Pneumonia, influenzal*	631	28	6	—	1	655	52	13	—	7
Deaths (from influenza)	15	22	2	—	6	23	7	4	—	—
Pneumonia, primary			160	9				171	16	
Deaths		—		7	—		49		11	9
Polio-encephalitis, acute	4	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	50	5	8	—	—	34	—	3	—	—
Deaths		—	—				—	—		
Puerperal fever	1	1	7	2	—	5	5	11	2	—
Deaths		—					1			
Puerperal pyrexia	142	7	16		4	133	9	18		1
Deaths										
Relapsing fever	1	1			—	1	—			—
Deaths										
Scarlet fever	1,224	37	250	57	19	1,857	56	215	65	60
Deaths	2	—	—	—	—	2	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths		—	—	—	—		—	—	—	—
Typhoid†	23	3	3	7	9					
Deaths	—	—			1					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,985	214	67	21	3	1,656	6	127	—	13
Deaths	16	2	2	—	—	10	—	2	—	1
Deaths (0–1 year)	299	27	63	41	21	289	23	57	14	13
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,867	530	520	177	99	5,905	1780	570	178	125
Annual death rate (per 1,000 persons living)			11·3	11·8	‡			11·5	11·9	10·9
Live births	5,308	467	933	294	208	5,141	519	727	347	181
Annual rate per 1,000 persons living			19·0	19·5	‡			14·7	23·2	15·9
Stillbirths	176	20	32			215	13	37		
Rate per 1,000 total births (including stillborn)			33					48		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.
† Includes paratyphoid A and B for Northern Ireland.
‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

Between the week under review and the preceding week there were only small differences in the number of cases of infectious diseases notified in England and Wales. The largest numerical deviations were those for scarlet fever, an increase of 29 cases, and for measles, a decrease of 38 cases. The increase in scarlet fever was confined to the Midland and Northern counties, where 95 cases in excess of last week's were recorded, while in the southern sections of the country there was a decrease, notifications being 65 fewer. In Scotland there was a general tendency for notifications to rise, with the exception of diphtheria, of which 32 cases fewer than in the previous week were notified.

Dysentery

The notifications for dysentery in England and Wales fell from 143 to 139. Increases were reported in several counties, the largest of the new local outbreaks being in Essex (Epping U.D., 12). In Scotland the number and distribution of cases have undergone little change in the past three weeks. The largest totals are those of Lanark County (28), Edinburgh (19), and Dundee (14).

Poliomyelitis

No change occurred in the number of cases of poliomyelitis in England and Wales compared with the previous week's total, when the largest number of notifications since last September was recorded. The cases were widely distributed, and only six administrative areas reported more than 1 case. These areas were Dorsetshire (Bridport R.D., 3), Lancashire (Manchester C.B., 3), Cambridgeshire (Cambridge M.B., 2), Middlesex (Edmonton M.B., 2), Norfolk (Mitford and Launditch R.D., 2), Oxfordshire (Bullingdon R.D., 2). Counties which had a single case in more than one administrative area were Essex (3), Hertfordshire (4), London (5), and Surrey (5). In Scotland 8 cases, compared with 2 in the preceding week, were notified (Edinburgh 4, Glasgow 2, Dundee 1, Fife County 1). Two deaths have been reported from a small outbreak in Enniskillen, Northern Ireland.

Diphtheria in Scotland

Owing to the increasing proportion of the *gravis* type of bacillus occurring among cases of diphtheria, the medical authorities of Scotland have launched an intensive campaign for the increased immunization of children. As a result of publicity earlier in the year 56% of the parents had responded —that is, 600,000 of the child population of 1,120,000 have already been treated. The present effort is an attempt to immunize at least 85% of the children.

Reports of medical officers in England have suggested that the *gravis* type is occurring in a larger proportion of cases throughout the country. No comparisons can be made, since it is only in a few hospitals that *C. diphtheriae* is typed as a routine procedure, and it is unsafe to generalize from results obtained from relatively small areas.

Week Ending November 1

The returns of infectious diseases for the week included the following: scarlet fever, 1,204; whooping-cough, 1,955; diphtheria, 915; measles, 624; cerebrospinal fever, 102; poliomyelitis, 23; dysentery, 123; paratyphoid, 35; typhoid, 20.

A. A. Holbrook (*Arch. intern. Med.*, 1941, **68**, 294) studied the blood picture in 56 chicken-pox patients and 15 controls, with the following result: A drop in the total white blood cell count to 5,000 per c.mm. or less, principally at the expense of the neutrophil polymorphonuclear cells, combined with the appearance of immature lymphocytes and plasma cells, is the significant feature in the blood picture of varicella. When this combination is found in the incubation period, the onset of the rash may be foretold with fair accuracy. When such findings are wrong, the cases may be examples of the non-eruptive form. Holbrook suggests that a strong lymphocytic reaction in varicella may be decisive in producing lymphatic leukaemia in susceptible persons.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS of their articles must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

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QUERIES AND ANSWERS

Persistent Skin Condition after X Rays for Pruritus Ani

S. P. writes: I am wondering if a note in your "Queries" column would bring out any helpful suggestions in the following case. The patient, a woman aged 55, married, with one child aged 26, some eight years ago had pruritus ani (not seen by me), and was given *x*-ray therapy. There is little doubt that the dosage was excessive. Since then the skin of the perineum has been breaking down constantly, seldom remaining even reasonably healthy for more than two or three months at a time. The patient herself is of a highly strung and somewhat neurotic disposition, and has in the past suffered from attacks of dermatitis herpetiformis. She has been seen by half a dozen dermatologists, and psychotherapy has been tried. The remedies suggested have been almost legion: tannic acid, dyes, Unna's paste, thorium-*x*, most of the vaunted antipruritic powders and ointments, silver nitrate cautery, and so forth. About the only thing I can think of now is skin grafting, but I should imagine that the risk of failure would be considerable in view of the locality.

Stabbing Heel Pains in Rheumatoid Arthritis

W. R. S. writes: A woman with advanced rheumatoid arthritis suffers from stabbing pains in the heel, coming on mostly during the night and disturbing her rest. They are relieved if she puts her foot out of bed. Advice as to prevention or treatment would be much appreciated.

Treatment of Chilblains

Dr. P. BINNINGTON (Hull) writes: May I suggest that Dr. Frank Matthews and "Stasis" (October 18, p. 568) try Lugol's solution for the treatment of chilblains. I too have found the use of calcium preparations disappointing, and for some years I have prescribed Lugol's solution, 12 minims, to be taken in half a tumbler of water three times daily directly after meals, with good effect. It will clear up even severe ulcerated cases, and if started at the onset of the condition a few days' treatment suffices. Unfortunately Lugol's solution is not pleasant to take, but my experience is that it does give relief.

Income Tax

Allowances, 1941-2

"R.A.F.V.R." sends particulars of his assessment for 1941-2, and asks whether further allowances can be claimed.

*** The personal allowance given (£140) is the amount applicable to a married man. The life assurance relief (£15 at 3s. 6d. in the £) may cover payments under the contract with the Medical Sickness Society; if not a supplementary claim should be made in respect of those payments. It is improbable that any allowance can be obtained for use of car, as it will probably be held that the car is not "necessarily" used "in the performance of the duties," and that any such necessity would presumably be met by R.A.F. transport.

Purchase of Goodwill by Instalments

R. C. inquires in what circumstances payments of instalments "can be put against income tax."

*** Normally the purchase price of goodwill is either a definite amount or an amount unknown at the date of purchase to be determined by subsequent events. In such cases the amount to be paid is clearly "capital"—it is not taxable in the hands of the vendor whether he receives it in a lump sum or in instalments, and the purchaser cannot obtain any relief in respect of it. If, however, the purchase agreement is so worded as to amount to the sale of the goodwill in consideration for a fixed or fluctuating annuity, then the payer is entitled to deduct tax at standard rates from the gross amounts which he pays, and the vendor of course suffers tax accordingly. Such cases are presumably rare, as the effect is to place the income-tax burden on the recipient of what is in common sense, whether in law or not, a capital sum.

LETTERS, NOTES, ETC.

International Hospital Association: United Kingdom Council

It is thought by many that the war has rendered defunct all international associations. One at least—the International Hospital Association—is not dead, although it may be moribund. Signs of its revival are actually appearing, for a conference has been called to discuss the position of hospitals the world over after victory and the coming of peace. The United Kingdom Council of the I.H.A., of which Mr. W. McAdam Eccles, M.S., F.R.C.S., is chairman, is sponsoring this line of treatment for the patient. The meeting will be held in the Great Hall of the British Medical Association House, Tavistock Square, London, on Tuesday, November 25, from 2 to 5 p.m. A paper will be read by Prof. A. T. Jurasz, dean of the Polish Medical Faculty of the University of Edinburgh, on "The International Position of Hospitals after Victory and the Coming of Peace," and a second will be on "The Position of Hospitals in the English-speaking Countries after the Coming of Peace." Representatives, both Governmental and medical, from fifty-four countries have been asked to attend, and the Minister of Health, Mr. Ernest Brown, has signified his intention to honour the gathering by coming. Admission will be by ticket only. Any further information may be obtained from Mr. F. W. Adams, honorary secretary, 17, Bloomsbury Square, London, W.C.1.

"First Aid to the Injured"

Dr. E. A. WELSH (Felton, Morpeth) writes: I would like to congratulate Dr. J. C. Hodgson on his letter regarding the teaching of first aid (October 25, p. 595). After two years of war we are still receiving from the St. John authorities the same examination papers that have been used for the past twenty years, and fully half the questions have no bearing whatever on wartime injuries. If the authorities are too slow to realize our needs it is to be hoped that lecturers will concentrate on the essentials which he mentions, and not waste time on so much irrelevant matter.

Abbreviated Treatment for Bilharziasis

Dr. F. GORDON CAWSTON (Durban, S.A.) writes: By injecting into the deltoid muscle from 3 to 3½ c.cm. of anthiomaline three or even four times in a week I seem to have effected a cure of *Schistosoma haematobium* infection in three weeks among out-patients continuing their work though reporting some generalized muscular pain. This would indicate that the eggs are disintegrated and the adult worms destroyed most readily by giving the drug sufficiently often to prevent their recovering from one dose before the next, and before much of the drug already administered has been eliminated. With *mansoni* infection escape of the eggs is too uncertain to be much of a guide as to when treatment may safely be discontinued, and 25 to 30 grains of tartar emetic is needed until such time as careful investigation has revealed the clinical equivalent of anthiomaline.

The Grenfell Association

Owing to the war the Grenfell Association is not offering new Christmas cards for sale this year. The purpose for which this sale was arranged—to get funds towards the association's welfare work among the people of Newfoundland and Labrador—is as urgent as ever, and the association is therefore selling instead new photograph postcards of Labrador (2d. each, postage extra) and attractive coloured postcards (packet of six 1s.). They may be obtained from the offices of the Grenfell Association, 66, Victoria Street, S.W.1.

Disclaimer

Mr. G. RIGBY-JONES, surgical registrar, National Temperance Hospital, writes: Incorrect reports and somewhat unfortunate publicity attached to a severe case of burns which I have recently treated by the Bunyan-Stannard method have resulted in a widespread belief that saline was used. This is not the case. The solution was electrolytically prepared hypochlorite.